NORTH CAROLINA DIVISION OF AIR QUALITY

Application Review Including Preliminary Determination

Issue Date: DRAFT

Region: Washington Regional Office
County: Hertford
NC Facility ID: 4600099
Inspector's Name: Betsy Huddleston
Date of Last Inspection: 06/08/2018
Compliance Code: 3 / Compliance - inspection

Facility Data

Applicant (Facility's Name): Nucor Steel – Hertford

Facility Address:
Nucor Steel – Hertford
1505 River Road
Cofield, NC 27922

SIC: 3312 / Blast Furnaces and Steel Mills
NAICS: 331111 / Iron and Steel Mills

Facility Classification: Before: Title V **After:** Title V
Fee Classification: Before: Title V **After:** Title V

Permit Applicability (this application only)

SIP: 15A NCAC 02D .0515, .0516, and .0521
NSPS: N/A
NESHAP: N/A
PSD: 15A NCAC 02D .0530
PSD Avoidance: N/A
NC Toxics: 15A NCAC 02D .1100
112(r): N/A
Other: N/A

Contact Data

Facility Contact	Authorized Contact	Technical Contact
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Application Data

Application Number: 4600099.16C
Date Received: 12/22/2016
Application Type: Modification
Application Schedule: PSD

Existing Permit Data
Existing Permit Number: 08680/T21
Existing Permit Issue Date: 06/01/2018
Existing Permit Expiration Date: 06/30/2019

Total Actual emissions in TONS/YEAR:

CY	SO2	NOX	VOC	CO	PM10	Total HAP	Largest HAP
2016	108.75	331.73	10.61	1103.65	126.56	4.34	2.77 [Hexane, n-]
2015	60.02	326.36	15.18	1174.85	114.61	6.74	3.13 [Benzene]
2014	211.02	394.72	17.14	1388.76	111.54	7.13	3.32 [Hexane, n-]
2013	286.11	465.49	17.12	1228.40	87.81	6.79	3.13 [Hexane, n-]
2012	147.94	351.59	11.98	1058.81	80.77	4.53	2.42 [Benzene]

Review Engineer: Kevin Godwin

Review Engineer's Signature: **Date:**

Comments / Recommendations:
Issue: 08680/T22
Permit Issue Date: DRAFT
Permit Expiration Date: 06/30/2019

I. Purpose of Application

A. Nucor Steel – Hertford (Nucor) owns and operates a plate steel manufacturing plant (SIC 3312) at 1505 River Road, Cofield, NC. Application No. 4600099.16C was received by the Division of Air Quality on December 22, 2016. A completeness letter dated January 20, 2017 was sent to the applicant stating the PSD application was considered complete for processing on the date received. The facility is currently operating in accordance with North Carolina Department of Environmental Quality (DEQ), Division of Air Quality (DAQ), Title V Permit No. 08680T21 issued on June 1, 2018.

As stated in the application, Nucor has completed several non-PSD modifications at the facility since the last PSD analysis was conducted in 2010. The applications are summarized as follows:

1. The facility submitted an application in 2011.
2. The facility submitted a second permit application in 2012 which was modified in 2013 with no changes in emissions.
3. The facility submitted a third separate application in 2015.

While these projects did not trigger PSD review, Nucor considers periodic voluntary PSD review a best management practice. The following sources from the above listed applications will be evaluated in this PSD analysis:

<u>Emission Sources from the 2011 Application</u>

Ladle preheater (ES106),
Four natural gas fired emergency generators (ES103, 104, 105 & 107) [Note: ES103 and ES107 were actually not part of the 2011 application, but there are references to these emission sources in 2011. Thus, for the purpose of simplicity, these sources have been included with the 2011 application.]

<u>Emission Sources included in the 2012 & 2013 Applications</u>

Normalizing furnace (ES117)
Shot blaster (ES115)
Plasma shear – normalizing line (ES108)
Plasma torch – normalizing line (ES109)
Plasma shear – Q & T line (ES110)
Plasma torch – Q&T line (ES111)
DRI barge unloading (ES112)
DRI storage silos (ES113a & b)
DRI day bins (ES114)
Cooling tower (ES39)
Emergency generator (ES116)

<u>Emission Sources Included in the 2015 Application</u>

Oxygen vaporizer (ES201)
Cooling tower for roll mill (I43)
Plasma shear with baghouse (ES205)
Burning bed with baghouse (ES206)
Temporary boiler (ES204)
Car Bottom Furnace (ES202)
Lime injection system burners (ES203)
Rolling Mill (ES207)
Tempering furnace (ES97)

B. Nucor requested to move the rolling mill operation from the insignificant activities list to the permitted emission source list (as ES207) in the 2015 application because new information was available to quantify the emissions

from these operations. Nucor is clarifying the source of these emissions and how these emissions are related to existing BACT limits in the permit.

Melt shop fugitive emissions are quantified as 10% of the permitted VOC emissions from the Electric Arc Furnace (ES01), (per guidance from Nucor corporate that is based on studies conducted over the past several years at multiple Nucor mills). These emissions were previously accounted for in the Rolling Mill Operations (ES207) which is currently permitted, however the facility now believes it is more appropriate to associate these emissions with the EAF (ES01). Note that this is a redistribution of previously quantified emissions and not an emissions increase at the facility. Potential emissions have been updated accordingly in Attachment I.

Volatilization of organic compounds in oil and grease used in the melt shop and rolling mill also contributes to fugitive emissions. Oil and grease is used in the caster and in rolling/finishing/shipping operations. The caster is located in the melt shop and is vented to the baghouse that also controls the EAF (CD01). Therefore, fugitive VOC emissions from oil and grease used in the caster are considered to be accounted for in the melt shop fugitive emissions that are calculated as 10% of the permitted VOC emissions from the EAF.

VOC emissions from oil and grease in rolling/finishing/shipping operations are calculated using the weight percentage of VOC contained in the oil and grease, per testing that was conducted by Nucor corporate. This is an update to how emissions were previously calculated for ES207. Supporting calculations are included in Attachment I.

The updated method of calculating melt shop fugitive emissions affects the VOC BACT limit in Section 2.1.-A.4.b. for fugitive emissions from the EAF (ES01), Ladle Metallurgy Furnace (ES02), Continuous Slab Caster (ES03), and non-vented natural gas combustion sources (ES05 through ES15 and ES94). The current BACT limit estimated fugitive VOCs from the furnace at 1% of EAF emissions. The recent guidance from corporate, as discussed above, estimates fugitive emissions at 10%. Further, Nucor has added several combustion sources to the permit that are vented through the roof monitor (ES106 and ES202).

C. Nucor originally requested to remove ES93 (Railcar and/or truck unloading of injection carbon) and its associated control device, CD05 (baghouse). However, upon reviewing the draft permit and the uncertainty of the request made regarding removal, the area was visually observed once again. It was determined that this emission source and control device were actually still installed and was operational. Thus, Nucor is now requesting to leave this emission source and control device on the permit.

D. Nucor is replacing the tundish pre-heaters (ES11 & ES12), and the facility continues to make efficiency improvements to the Electric Arc Furnace (ES01).

While Nucor is not proposing any changes to ES-93A, the source has undergone PSD review with the original PSD permit application. Thus, Nucor requests that the "PSD" identifier be added to Table 1 of the permit.

Nucor is requesting to change the fuel of the temporary boiler (ES204) to natural gas. It was previously permitted for No. 2 fuel. Potential emissions calculations are included in Attachment I and forms are included in Section 8 of the application.

Nucor is requesting to update the emission source description of ES02 to "One Ladle Metallurgical Furnace consisting of two ladles with one set of AC electrodes alternately servicing both ladles equipped with a side draft hood." Nucor believes that "Ladle Metallurgy Furnace" ("LMF") is a more accurate description of the source. Reference to ES02 in this application will be consistent with this terminology.

E. In an addendum received July 5, 2017, Nucor is requesting a new oxygen plant consisting of 2 natural gas-fired vaporizer burners (11 million Btu per hour each, ID Nos. ES208 and ES209), a natural gas-fired emergency generator (450 kW, ID No. ES210), and a cooling tower (ID No. I-44) to replace the existing oxygen plant.

F. In an addendum received August 23, 2017, Nucor is requesting to re-build two LMF preheaters (ES05 & ES06) at the Cofield facility and revisions to the Compliance Assurance Monitoring (CAM) permit condition for the electric arc furnace (EAF) (ES01). Nucor is providing a BACT analysis for these emission sources in this addendum and will conduct the required ambient analyses. The existing LMF preheaters (ES05 & ES06) are subject to PSD, and Nucor is requesting to re-permit the sources as PSD sources in this addendum.

G. In a letter dated October 1, 2018, Nucor requested that the existing testing requirements be changed based on historical test data for the Electric Arc Furnace and other emission sources within the melt shop that vent to the melt shop baghouse and the reheat furnace.

II. Application Chronology

Date	Event
September 14, 2016	Pre-application meeting between NCDAQ and Nucor occurred.
December 22, 2016	PSD application received.
January 20, 2017	Application completeness letter mailed.
July 5, 2017	Application addendum received. This addendum was processed as a minor modification under 15A NCAC 02D .0515 (4600099.18A) and Permit No. 08680T21 was issued on June 1, 2018.
August 23, 2017	Application addendum received.
September 12, 2017	Revised air dispersion modeling received.
July 13, 2018	Preliminary Determination and Draft Permit were provided to Supervisor.
August 10, 2018	Preliminary Determination and Draft Permit were provided to the applicant and the Washington Regional Office (WARO).
August 24, 2018	The WARO responded with comments on the draft.
September 11, 2018	The applicant responded with comments on the draft.
September 27, 2018	A teleconference was held between the applicant, WARO, and Central Office regarding changing testing requirements.
October 1, 2018	The applicant sent a letter as a result of the September teleconference requesting changes to testing requirements.
October 19, 2018	The Permitting Section revised the draft based on the October 1, letter.
October 23, 2018	The Permitting Section provided a revised draft to the applicant, WARO, and the Stationary Source Compliance Branch.
October 31, 2018	Final comments on the revised draft were received. All comments were addressed.
, 2018	Preliminary Determination, Draft Permit & Public Notice were provided to the facility, EPA, DAQ Website, and WARO. A Public notice was published in XXXX and provided to the County Manager.

III. Existing Operations

The facility is major under 40 CFR Part 70 (Title V) due to its potential to emit (PTE) 100 tons per year (tpy) or more of multiple criteria pollutants from the point sources and fugitive sources.

The facility is a major stationary source under 40 CFR Part 51 (PSD). The original facility and several major modifications were permitted under the PSD regulations.

The facility is a minor source of hazardous air pollutants (HAPs) under 40 CFR 63 due its PTE of less than 10 tpy of each individual HAP and less than 25 tpy of total aggregate HAPs.

IV. Compliance Status

The DAQ has reviewed the compliance status of this facility. During the most recent compliance inspection performed by Ms. Betsy Huddleston on June 5-8, 2018, no compliance issues were observed of the facility sources and controls devices. No compliance violations were discovered during partial records review.

V. Emissions

A. Emissions from the Electric Arc Furnace (ES01) are calculated using the current BACT limits in the permit. The limits are expressed in pound of pollutant per ton of steel (with the exception of PM_{10}, which is expressed in grains per dry standard cubic foot). A maximum throughput of 350 tons of steel per hour is used for the calculations.

VOC is emitted through the baghouse and as fugitives. Per guidance from Nucor corporate based on past studies, it is assumed that 10% of the permitted VOC is emitted as fugitives (14.24 tpy) and the remaining VOC is emitted through the baghouse controlling the EAF (CD01).

B. Combustion sources evaluated in this analysis include furnaces and pre-heaters used in the melt shop, shears and torches used to cut steel, a temporary boiler, and emergency generators. All combustion sources fire natural gas. Emissions are calculated using AP-42 emission factors or vendor guarantees.

C. Fugitive VOC emissions from the melt shop, furnace/caster, and rolling/finishing/shipping emissions are calculated per guidance received from Nucor corporate that is based on recent testing:

Melt shop fugitive emissions are quantified as 10% of the permitted VOC emissions from the Electric Arc Furnace (ES01). Melt shop emissions are vented via the roof monitors and are included in the calculations for the EAF in Attachment I.

Fugitives from the furnace/caster and rolling/finishing/shipping operations are from the volatilization of oil and grease used in the melt shop. Furnace/caster VOC emissions are accounted for in the melt shop fugitive emissions described above. Fugitive VOCs from rolling/finishing/shipping operations are determined by multiplying the weight percent of volatile compounds by the usage of oils and grease in the rolling/finishing/shipping operations and are accounted for in emissions from the Rolling Mill Operations (ES207). See Attachment I.

D. Miscellaneous sources with PM emissions from blasting, torching, or cutting steel are calculated using either the exhaust concentration of PM from the baghouse and the flow rate of the exhaust through the baghouse or the inlet flow to the baghouse and the control efficiency of the baghouse.

E. Emissions from paved and unpaved roadways are calculated using AP-42 emissions factors. All assumptions used to calculate the appropriate emission factor are included in the application.

F. Particulate matter emissions from cooling towers are based on the calculation equation in AP-42. PM speciation factors were used from a widely used peer reviewed journal article and CARB database, as referenced in the application.

G. Emissions from the oxygen plant sources (ID No. ES208, ES209, ES210, and I-44) are calculated using AP-42 emission factors.

H. Combustion sources evaluated in this analysis include the two LMF preheaters (ES05 and ES206). The preheaters fire natural gas. Emissions are calculated using AP-42 emission factors and are included in Attachment I.

VI. Regulatory Summary

A. The following is a list of all air quality regulations under the State Implementation Plan (SIP) applicable to the sources:

Nucor has addressed compliance with the SIP requirements in the construction applications for the 2011 project, the 2012/2013 project, and the 2015 project. DAQ has reviewed the projects and has concurred with SIP compliance. There are no proposed changes to any heat inputs or process weight rates. As such, the previous compliance determinations have not changed. Below is a summary of the applicable SIP requirements for the sources that were permitted in the 2011, 2012/2013, and 2015 projects.

SIP Requirements for Emission Sources from the 2011 Application
Ladle Preheater (ES106) - 15A NCAC 2D .0516 and .0521
Emergency generators (ES103, ES104, ES105 & ES107) - 15A NCAC 2D 0516, .0521, .0524 and .1111

SIP Requirements for Emission Sources from the 2012 & 2013 Applications *(excluding the PSD avoidance regulation for the limitations as outlined in Permit Condition No, 2.2-D.1.)*

Normalizing furnace (ES117) - 15A NCAC 2D .0515, .0516, and .0521
Shot blaster (ES115) - 15A NCAC 2D .0515 and .0521
Plasma shear – normalizing line (ES108) - 15A NCAC 2D .0515, .0516, and .0521
Plasma torch – normalizing line (ES115) - 15A NCAC 2D .0515, .0516, and .0521
Plasma shear – Q & T line (ES110) - 15A NCAC 2D .0515, .0516, and .0521
Plasma torch – Q&T line (ES111) - 15A NCAC 2D .0515, .0516, and .0521
DRI barge unloading (ES112) - 15A NCAC 2D .0515, .0521, and .0614
DRI storage silos (ES113a & b) - 15A NCAC 2D .0515, .0521, and .0614
DRI day bins (ES114) - 15A NCAC 2D .0515, .0521, and .0614
Cooling tower (ES39) - 15A NCAC 2D .0515 and .0521
Emergency generator (ES116) - 15A NCAC 2D 0516, .0521, .0524 and .1111

SIP Requirements for Emission Sources from the 2015 Application
Oxygen vaporizer (ES201) - 15A NCAC 2D .0503, .0516, and .0521
Cooling tower for roll mill (I43) - 15A NCAC 2D .0515 and .0521
Plasma shear with baghouse (ES205) - 15A NCAC 2D .0515, .0516, and .0521
Burning bed with baghouse (ES206) - 15A NCAC 2D .0515, .0516, and .0521
Temporary boiler (ES204) – 15A NCAC 2D .0503, .0516, and .0521
Car Bottom Furnace (ES202) - 15A NCAC 2D .0515, .0516, and .0521
Lime injection system burners (ES203) – 15A NCAC 2D .0515, .0516, and .0521
Rolling Mill (ES207) – VOC Emissions – No applicable requirement

There will be no changes to process weight rates and the heat inputs for the EAF, tundish pre-heaters and railcar/truck unloading of lime. Compliance with the applicable SIP requirements for these sources has been previously addressed and the compliance analysis will not change.

SIP Requirements
EAF (ES01)- 15A NCAC 2D .0516, .0524, .0530, .0614, and .1111
Tundish Pre-heaters (ES11 & ES12)- 15A NCAC 2D .0516, .0521, and .0530

Nucor is not requesting any changes to currently applicable North Carolina State Implementation Plan (SIP) requirements for the sources as listed above. In addition to the currently permitted SIP regulations, the following regulation will be applicable to the sources included in this application.

B. Oxygen Plant Sources (ID Nos. ES208, ES209, ES210, and I-44)

1. 15A NCAC 02D .0503 "Particulates from Fuel Burning Indirect Heat Exchangers" – This regulation limits the particulate emissions based on facility-wide heat input rate. For sources with maximum heat inputs greater than 10 MMBtu/hr, the following equation is used to determine the PM limit:

$$E = 1.090 * Q^{-0.2594}$$

Where E is the allowable emission limit for particulate matter in lb/MMBtu and Q is the sum of the maximum heat input (MMBtu/hr) of all fuel burning indirect heat exchangers at a plant site which are in operation, under construction, or permitted. There are existing indirect heat exchangers at the Cofield facility, totaling approximately 12.7 MMBtu/hr in maximum heat input capacity. The maximum heat input ratings of the

vaporizer burners (ES208 & ES209) are 11 MMBtu/hr each. Therefore, the PM limit is 0.43 lb/MMBtu. The vaporizers will meet this limit.

2. 15A NCAC 02D .0516 "Sulfur Dioxide Emissions from Combustion Sources" - Under this regulation, emissions of sulfur dioxide from combustion sources cannot exceed 2.3 pounds of sulfur dioxide per million Btu input. The vaporizer burners (ES208 & ES209) and the emergency generator (ES210) are subject to this regulation. The combustion sources will meet this limit.

3. 15A NCAC 02D .0521 "Control of Visible Emissions" - Under this regulation, for sources manufactured after July 1, 1971, visible emissions cannot be more than 20 percent opacity when averaged over a six-minute period. However, six-minute averaging periods may exceed 20 percent opacity under the following conditions:

   - No six-minute period exceeds 87 percent opacity,
   - No more than one six-minute period exceeds 20 percent opacity in any hour, and
   - No more than four six-minute periods exceed 20 percent opacity in any 24-hour period.

   This rule applies to all processes that may have a visible emission, including the new sources at the oxygen plant. Compliance is expected.

4. 15A NCAC 02D .0524 "New Source Performance Standards" - This regulation requires that sources subject to New Source Performance Standards, promulgated in 40 CFR Part 60, comply with emission standards, monitoring, and reporting requirements, maintenance requirements, notification and recordkeeping requirements, performance requirements, test method and procedural provisions, and any other provisions as specified. The new combustion sources (ES208 & ES209) at the Cofield facility are subject to the NSPS – Subpart Dc. The emergency generator (ES201) is subject to NSPS – Subpart JJJJ. Compliance is expected.

C. For LMF Preheaters (ID Nos. ES05 and ES06):

1. 15A NCAC 2D .0515 "Particulates from Miscellaneous Industrial Processes" - This regulation limits the particulate emissions based on total throughput. This regulation limits particulate emissions based on process throughput using the equation $E = 4.10 \times P^{0.67}$, for process rates (P) less than 30 tons per hour (ton/hr) and $E=55 \times P^{0.11}-40$ for process rates greater than 30 tons per hour where E is the allowable emission limit in lb/hr.

   The LMF preheaters are miscellaneous sources subject to this regulation. The maximum process rate is assumed to be the permitted maximum capacity of the melt shop: 350 tons per hour. Using the equation described above, allowable PM emissions from these sources are 64.8 lb/hr. The potential PM emissions are well below the calculated limit, as seen in Attachment I.

2. 15A NCAC 02D .0516 "Sulfur Dioxide Emissions from Combustion Sources" - Under this regulation, emissions of sulfur dioxide from combustion sources cannot exceed 2.3 pounds of sulfur dioxide per million Btu input. The LMF preheaters (ES05 & ES06) are subject to this regulation. The combustion sources will meet this limit, as a result of natural gas firing.

3. 15A NCAC 02D .0521 "Control of Visible Emissions" - Under this regulation, for sources manufactured after July 1, 1971, visible emissions cannot be more than 20 percent opacity when averaged over a six-minute period. However, six-minute averaging periods may exceed 20 percent opacity under the following conditions:

   - No six-minute period exceeds 87 percent opacity,
   - No more than one six-minute period exceeds 20 percent opacity in any hour, and
   - No more than four six-minute periods exceed 20 percent opacity in any 24-hour period.

VII. New Source Review (NSR)/Prevention of Significant Deterioration (PSD)

A "major stationary source" is defined as any one of 28 named source categories with the potential to emit 100 tons per year (tpy) or more, or any other stationary source with the potential to emit at least 250 tpy of one or more NSR/PSD regulated pollutant. Nucor is an existing major stationary source classified in one of the named categories (i.e. Iron and Steel Mills).

Project emissions from each modification occurring since the most recent PSD permit issuance were not individually above the significant emission rates (SERs) and thus were not subject to PSD. The potential emissions for the three projects are shown below in Table 1. For the purposes of this voluntary PSD analysis, Nucor has elected to perform a PSD analysis for each pollutant that has previously been evaluated under PSD: carbon monoxide (CO), nitrogen oxides (NO_x), particulate matter (PM, also called total suspended particulate [TSP]), particulate matter less than 10 and 2.5 microns in aerodynamic diameter (PM_{10} and $PM_{2.5}$), sulfur dioxide (SO_2), volatile organic carbon (VOC), and lead (Pb).

Table 1, Project emissions from applications in 2011, 2012/2013, and 2015

2011 Project Emissions

Source Description	Unit ID	CO (tpy)	NOx (tpy)	TSP (tpy)	PM-10 (tpy)	PM-2.5 (tpy)	SO2 (tpy)	VOC (tpy)	Pb (tpy)	CO_{2e} (tpy)
Emergency Generatory (131 kW)	ES103	0.25	0.38	4.47E-03	4.47E-03	4.47E-03	2.63E-04	5.28E-02	-	52
Emergency Generatory (300 kW)	ES104	0.89	0.44	1.03E-02	1.03E-02	1.03E-02	6.03E-04	2.21E-01	-	120
Emergency Generatory (300 kW)	ES105	0.89	0.44	1.03E-02	1.03E-02	1.03E-02	6.03E-04	2.21E-01	-	120
Emergency Generatory (20 kW)	ES107	0.06	0.08	6.61E-03	6.61E-03	6.61E-03	1.37E-02	1.66E-02	-	4
Ladle Preheater	ES106	3.59	2.13	3.24E-01	3.24E-01	3.24E-01	2.56E-02	2.35E-01	2.13E-05	5,130
Project Emissions		**5.67**	**3.48**	**0.36**	**0.36**	**0.36**	**0.04**	**0.75**	**2.13E-05**	**5,425.67**
SER		**100**	**40**	**25**	**15**	**10**	**40**	**40**	**1**	**75,000**
PSD Review Required		**No**	**No**	**No**	**No**	**No**	**No**	**No**	**No**	**No**

2013 Project Emissions (modification of 2012 application) with the removal of PSD avoidance operating limits

Source Description	Unit ID	CO (tpy)	NOx (tpy)	TSP (tpy)	PM-10 (tpy)	PM-2.5 (tpy)	SO2 (tpy)	VOC (tpy)	Pb (tpy)	CO_{2e} (tpy)
Normalizing Furnace	ES117	10.96	25.61	0.99	0.99	0.99	0.08	0.72	6.53E-05	15,258.08
Shot Blaster	ES115	-	-	0.59	0.59	0.59	-	-	-	-
Plasma Sheer- Normalizing Line	ES108	0.12	0.14	2.40E-03	2.40E-03	2.40E-03	8.41E-04	7.71E-03	7.01E-07	163.85
Plasma Torch- Normalizing Line	ES109	0.12	0.14	2.40E-03	2.40E-03	2.40E-03	8.41E-04	7.71E-03	7.01E-07	163.85
Plasma Sheer- Q&T Line	ES110	0.12	0.14	2.40E-03	2.40E-03	2.40E-03	8.41E-04	7.71E-03	7.01E-07	163.85
Plasma Torch- Q&T Line	ES111	0.12	0.14	2.40E-03	2.40E-03	2.40E-03	8.41E-04	7.71E-03	7.01E-07	163.85
DRI Barge Unloading[1]	ES112	-	-	5.68	4.79	0.93	-	-	-	-
DRI Barge Unloading Fugitives[1]	ES112FUG	-	-	1.05E-01	4.95E-02	7.50E-03	-	-	-	-
DRI Storage Silos	ES113a & b	-	-	1.88	1.88	1.88	-	-	-	-
DRI Day Bins	ES114	-	-	3.08	3.08	3.08	-	-	-	-
Cooling Tower[1]	ES39	-	-	16.66	2.48	1.49	-	-	-	-
Emergency Generator	ES116	0.89	0.44	0.01	0.01	0.01	0.00	0.22	-	119.92
Project Emissions		**12.32**	**26.62**	**29.00**	**13.88**	**8.99**	**0.08**	**0.97**	**6.81E-05**	**16,033.38**
SER		**100**	**40**	**25**	**15**	**10**	**40**	**40**	**1**	**75,000**
PSD Review Required		**No**	**No**	Yes	**No**	**No**	**No**	**No**	**No**	**No**

[1]Updated emissions estimates from what was originally submitted.

2015 Project Emissions

Source Description	Unit ID	CO (tpy)	NOx (tpy)	TSP (tpy)	PM-10 (tpy)	PM-2.5 (tpy)	SO2 (tpy)	VOC (tpy)	Pb (tpy)	CO_{2e} (tpy)
Oxygen Vaporizer	ES201	4.38	5.21	0.40	0.40	0.40	0.03	0.29	2.61E-05	6,263.45
Cooling Tower for Roll Mill	I-43	-	-	0.38	0.06	0.03	-	-	-	-
Plasma Shear with Baghouse	ES205	0.11	0.07	5.25E-01	5.25E-01	5.25E-01	8.20E-04	7.51E-03	6.83E-07	164.15
Burning Bed with Baghouse	ES206	0.11	0.07	8.46E-01	8.46E-01	8.46E-01	8.20E-04	7.51E-03	6.83E-07	164.15
Temporary Boiler	ES204	4.00	4.76	3.62E-01	3.62E-01	3.62E-01	2.86E-02	2.62E-01	2.38E-05	0.38
Car Bottom Furnace	ES202	17.19	10.23	1.56E+00	1.56E+00	1.56E+00	1.23E-01	1.13E+00	1.02E-04	24594.81
Lime Injection System Burners	ES203	4.43	2.64	4.01E-03	4.01E-03	4.01E-03	3.17E-02	2.90E-01	2.64E-05	6340.40
Rolling Mill Operations[1]	ES207	-	-	-	-	-	-	7.60	-	-
Project Emissions		**30.23**	**22.98**	**4.07**	**3.75**	**3.72**	**0.22**	**9.58**	**1.80E-04**	**37,527.35**
SER		**100**	**40**	**25**	**15**	**10**	**40**	**40**	**1**	**75,000**
PSD Review Required		**No**	**No**	**No**	**No**	**No**	**No**	**No**	**No**	**No**

[1]Updated emissions estimates from what was originally submitted.

The following table provides a summary of combined emissions:

	CO (tpy)	NOx (tpy)	TSP (tpy)	PM-10 (tpy)	PM-2.5 (tpy)	SO_2 (tpy)	VOC (tpy)	Pb (tpy)	CO2e (tpy)
Combined Project Emissions	48.22	69.52	33.43	17.99	13.07	0.34	11.30	2.69E-4	58, 986.4
SER	100	40	25	15	10	40	40	1	75,000
PSD Review required	No	Yes	Yes	Yes	Yes	No	No	No	No

While each of the above projects were not subject to PSD, Nucor is voluntarily willing to review the above projects under the PSD regulations. If the above projects were looked at as one project, PSD would be triggered for NOx, TSP, PM-10, and PM-2.5. In order to demonstrate that the above projects were separately planned and succinct projects, Nucor is providing the following information and analysis.

2011 Application

An application was filed in February 2011 to add four natural gas emergency generators and one ladle preheater. This application was filed nearly two years after the last PSD was filed for an expansion of the site *[Note that the 2010 PSD application was filed only to change the CO limit for the EAF.]* The emissions from these sources were relatively small and were actually insignificant in regards to the Title V definition of insignificant activity. However, Permit No. 08680T16 was issued on May 10, 2011 for these emission sources.

2012/2013 Applications

The permit application for this second project as listed above was initially filed in March of 2012. This application was filed nearly three years after the last PSD was filed for an expansion of the site *[Note that the 2010 PSD application was filed only to change the CO limit for the EAF]* and one year after the filing of the 2011 permit application for emission sources which were unrelated to the 2012 project. The 2012 application was filed to add DRI handling operations so that DRI could be brought in by barge at the site. Several other emission sources were added to the site, which is reflected in Table 4-1, as part of this permit application. Permit No. 08680T17 was issued on July 20, 2012.

In November 2013, an application was filed to add a second DRI storage silo (ES113b) and the PSD avoidance limits were changed from a time basis (hours per year) to a production basis (tons processed per year) for the DRI operations. These changes did not change any potential emissions and Permit No. 08680T18 was issued on April 11, 2014. The sources listed in Table 4-1 reflect the source (i.e., the second DRI storage silo, ES113b) that was added in the 2013 application.

Below is a listing of the emission sources that were associated with the 2012/2013 applications, along with installation and operation dates.

Source	Installation and Operation Dates
Normalizing furnace (ES117)	Installed: Spring 2013. Operational: July 2013
Shot blaster (ES115)	Installed: Spring 2013. Operational: July 2013
Plasma shear – normalizing line (ES108)	Installed: Spring 2013. Operational: July 2013
Plasma torch – normalizing line (ES115)	Installed: Spring 2013. Operational: July 2013
Plasma shear – Q & T line (ES110)	Installed: Spring 2013. Operational: July 2013
Plasma torch – Q&T line (ES111)	Installed: Spring 2013. Operational: July 2013
DRI barge unloading (ES112)	Installed: August 2013. Operational July 2014
DRI storage silos (ES113a & b)	Installed: August 2013. Operational July 2014
DRI day bins (ES114)	Installed: August 2013. Operational July 2014
Cooling tower (ES39)	The 5th Cell was never added as proposed in the 2012 application. The original 4 Cell Cooling tower (ES39), which still stands today, was installed and operational for startup in 2000.
Emergency generator (ES116)	Installed: Fall 2014. Operational: January 2015

Based on the above information, all of the emission sources, except the emergency generator and the modifications to the cooling tower, were installed in the Spring and Summer of 2013. The second DRI silo was installed in 2014 after the issuance of Permit No. 08680T18.

2015 Application

The permit application for the third project listed above was filed in November of 2015. This application was filed nearly six years after the last PSD was filed for an expansion of the site *[Note that the 2010 PSD application was filed only to change the CO limit for the EAF.]* and more than three years after the previous non-PSD project was filed (as discussed above). The application was filed to make miscellaneous changes at the site. Permit No. 08680T20 was issued on March 8, 2016 for the sources listed in the 2015 application.

Below is a listing of the emission sources that were associated with the 2015 applications, along with construction dates and installation dates.

Oxygen vaporizer (ES201) - Installed: Spring 2016. Operational: Spring 2016
Cooling tower for roll mill (I43) - Not yet installed
Plasma shear with baghouse (ES205) - Not yet installed
Burning bed with baghouse (ES206) – Installed: Spring 2018
Temporary boiler (ES204) – Temporary source; only brought on site when needed
Car Bottom Furnace (ES202) - Not yet installed
Lime injection system burners (ES203) – Installed in 2017
Rolling Mill (ES207) - Rolling Mill Operations have been in place since startup back in 2000 *[Note: VOC emissions were recently identified as being emitted from this source. This source was moved from the insignificant source list to the permitted source list.}*

Based on the above information, the rolling mill is an existing source that was part of the original mill construction, only one of the new emission sources has been installed, and all others are still in the planning stages for installation.

Lastly in the 2015 application, Nucor requested some minor changes to the burner system on the tempering furnace (ES97). The following excerpt is taken from the 2015 application.

"Nucor is requesting to modify the Tempering Furnace (ES97) to add burners to the discharge end of the furnace to better distribute the heat. The modification includes adding six (6) burners rated at 0.30 MMBtu/hr and two (2) rated at 0.50 MMBtu/hr. However, the addition of the burners will not cause the maximum heat input of the tempering furnace to increase. The potential heat input from the furnace will stay at or below the currently permitted 37 MMBtu/hr maximum heat input. Nucor is adding the burners to better distribute heat throughout the furnace, and not to burn additional gas. Nucor can monitor fuel usage and heat input for the furnace to ensure compliance with permitted limits. No change is requested to the permitted emission limits in Permit Condition 2.1-M.3."

Since there was no change in emissions from the tempering furnace, the emissions from the tempering furnace have not been included. The furnace continues to comply with the BACT limits in Permit Condition No. 2.1-M.3. Nucor has re-confirmed the BACT in Section 5.5 of this permit application, and this furnace has been included in the modeling section of this application.

Summary

The above three projects are separate and succinct projects that have been sensibly planned at Nucor. The first project was applied for two years after the previous PSD application (the 2009 PSD application as discussed above) was filed for the major modification at the site. As discussed above, the sources associated with the 2011 application could have been issued as insignificant activities under Title V.

The second project was applied for three years after the previous PSD application (the 2009 PSD application as discussed above) was filed for the major modification at the site and one year after the insignificant sources were

added in 2011. This was a carefully planned project with funding approved and construction commenced within a year of permit issuance.

The third project was applied for in late 2015, over three years after the 2012 project was filed at DAQ.

Based on the information provided in this section of the application, each of the above projects are independent projects and have been adequately addressed as separate projects and have been appropriately permitted as non-PSD projects in accordance with DAQ regulations.

As part of the 2012/2013 permit applications, Nucor elected to accept limits on certain emissions sources listed below to avoid PSD review for NOx, PM-10, and PM-2.5 for the overall 2012/2013 project. The following limits are listed in current Permit Condition No. 2.2-D.1.

1. ES108 - Plasma shear is limited to 4,380 hours per 12 month period.
2. ES109 - Plasma torch is limited to 4,380 hours per 12 month period.
3. ES110 - Plasma shear is limited to 4,380 hours per 12 month period.
4. ES111 - Plasma torch is limited to 4,380 hours per 12 month period.
5. ES112 - DRI barge receiving hopper is limited to 1,000,000 tons of DRI throughput per 12 month period.
6. ES113a and b - DRI storage silos are limited to 1,000,000 tons of DRI throughput per 12 month period.
7. ES114 - DRI day bins are limited to 1,000,000 tons of DRI throughput per 12 month period.

The potential to emit from the 2012/2013 project without the above federally enforceable PSD avoidance conditions are listed below in Table 2.

Table 2, 2013 Project emissions from 2012/2013 application with the removal of PSD avoidance limits

Source Description	Unit ID	CO (tpy)	NOx (tpy)	TSP (tpy)	PM-10 (tpy)	PM-2.5 (tpy)	SO2 (tpy)	VOC (tpy)	Pb (tpy)	CO_{2e} (tpy)
Normalizing Furnace	ES117	10.96	25.61	0.99	0.99	0.99	0.08	0.72	6.53E-05	15,258.08
Shot Blaster	ES115	-	-	0.59	0.59	0.59	-	-	-	-
Plasma Sheer- Normalizing Line	ES108	0.12	4.25	2.40E-03	2.40E-03	2.40E-03	8.41E-04	7.71E-03	7.01E-07	163.85
Plasma Torch- Normalizing Line	ES109	0.12	4.25	2.40E-03	2.40E-03	2.40E-03	8.41E-04	7.71E-03	7.01E-07	163.85
Plasma Sheer- Q&T Line	ES110	0.12	4.25	2.40E-03	2.40E-03	2.40E-03	8.41E-04	7.71E-03	7.01E-07	163.85
Plasma Torch- Q&T Line	ES111	0.12	4.25	2.40E-03	2.40E-03	2.40E-03	8.41E-04	7.71E-03	7.01E-07	163.85
DRI Barge Unloading[1]	ES112	-	-	5.68	4.79	0.93	-	-	-	-
DRI Barge Unloading Fugitives[1]	ES112FUG	-	-	1.05E-01	4.95E-02	7.50E-03	-	-	-	-
DRI Storage Silos	ES113a & b	-	-	1.88	1.88	1.88	-	-	-	-
DRI Day Bins	ES114	-	-	3.08	3.08	3.08	-	-	-	-
Cooling Tower[1]	ES39	-	-	16.66	2.48	1.49	-	-	-	-
Emergency Generator	ES116	0.89	0.44	0.01	0.01	0.01	0.00	0.22	-	119.92
Project Emissions		**12.32**	**43.05**	**29.00**	**13.88**	**8.99**	**0.08**	**0.97**	**6.81E-05**	**16,033.38**
SER		**100**	**40**	**25**	**15**	**10**	**40**	**40**	**1**	**75,000**
PSD Review Required		**No**	**Yes**	**Yes**	**No**	**No**	**No**	**No**	**No**	**No**

[1]Updated emissions estimates from what was originally submitted.

As shown in Table 2, PSD would have been triggered for NOx and TSP in the 2012/2013 project absent of the PSD avoidance conditions.

In this application, Nucor is voluntarily undergoing PSD review for the 2011, 2012/2013, and 2015 projects. Nucor does not need additional operation for the emission sources listed above in excess of the levels that were accepted as federally enforceable PSD avoidance limits.

Nucor is now establishing BACT limits for the emission sources that were contained in the three projects, which includes each emission source listed above in the 2012/2013 project for all pollutants for which the avoidance limit was established. Nucor is also modeling compliance for NAAQS and increment where applicable and is conducting all other applicable analyses as required by the PSD regulations as if the facility is operating at 8,760 hours per year. As such, upon completion of this application, the Cofield site will be conforming to all PSD requirements for all sources listed in the three previous projects. Thus, the removal of the PSD avoidance limits will not be considered a "sham" application as additional operation is not needed for the sources listed above, but the removal of the PSD avoidance limits would, in reality, be considered a "clean up" of the existing permit conditions as the site will be complying with all PSD requirements. Furthermore, the retention of the PSD avoidance limits would just needlessly require compliance with the current PSD avoidance permit limits and require compliance monitoring that technically has otherwise been satisfied by the submittal of this voluntary PSD application.

Based on the above information, Nucor has justified that this is not a "sham" application and requests that the PSD avoidance limits be removed from the application as all PSD requirements for such sources have otherwise been satisfied as part of this application. As a result of the removal of the PSD avoidance conditions, this permit application must be prepared under the requirements of 15A NCAC 2Q .0501(d)(2).

The BACT requirement applies to each new or modified emission unit from which there are emissions increases of pollutants subject to PSD review. Nucor is not required to perform a BACT analysis. Nucor is voluntarily performing a BACT analysis as a best management practice. Nucor is addressing the following pollutants in the BACT analysis contained in this application: carbon monoxide (CO), nitrogen oxides (NO_x), particulate matter (PM, also called total suspended particulate [TSP]), particulate matter less than 10 and 2.5 microns in aerodynamic diameter (PM_{10} and $PM_{2.5}$), sulfur dioxide (SO_2), volatile organic carbon (VOC), and lead (Pb). Nucor has previously undergone PSD review for some of these pollutants.

Electric Arc Furnace (EAF) PSD Applicability

The EAF has undergone PSD review in two previous applications; the original PSD pre-application for the mill in 1998, and for an increase in the short-term process rate from 250 to 350 tons per hour in 2009. The facility is currently planning efficiency enhancements for the EAF.

The first energy efficiency project for the EAP involved the replacement of the current oxygen and carbon distribution system (CoJet units replaced with JetBOx units). The JetBOx system will increase the overall efficiency of the electric arc furnace and reduce operating costs by providing better heat transfer, reducing plugging of the openings for fuel and oxygen in the combustion chamber, reducing refractory problems, and promoting a better slag consistency which allows for less carbon usage. Modifications will have to be made to the shell of the furnace to install the system, as the JetBOx system is located lower in the furnace and at a different angle than the existing system. Emissions from the furnace are expected to remain the same or decrease with better fuel efficiency. The DAQ approved this request on August 22, 2016 and determined that a permit modification was not required for the proposed change.

A second project that is associated with the EAF is Smart Arc (or something similar). This is an off-gas system for process optimization. The focus is lime and carbon usage, with potential to save oxygen, electricity, etc. The vendors advertise increased production, but typically Nucor has already pushed the equipment and there is no actual production benefit from these type systems. Therefore, Nucor is not applying for such capacity increase in this application. This system measures off-gas and helps to optimize and increase efficiency. It could be considered a change in operation, but typically what happens is that one operator does things slightly different than another operator and then the operators become more uniform in our operations as a result of the change. These systems are used to determine best practices, which typically reduce lime/carbon/energy usage, thus reducing the use of natural resources and emissions.

While it has been determined that these efficiency enhancements will not increase emissions, Nucor has elected to include the EAF in this PSD review since it may be nearly impossible to argue that there are no physical changes to the EAF. Nucor would rather re-confirm that the EAF has BACT, conduct all ambient analyses, and re-permit the EAF as an updated PSD source as part of this application to remove any doubt of PSD applicability for the energy enhancements to the EAF.

Tundish Pre-heaters PSD Applicability

Nucor is replacing the two (2) tundish pre-heaters (ID Nos. ES11 and ES12). There will be a physical replacement of old equipment with new equipment with the same BTU rating as existing equipment. The blowers and burner will be using latest technology and will be potentially more efficient, but there will be no change to production.

The tundish pre-heaters are subject to BACT limitations and are listed with the group of fugitive sources and combustion sources that are vented through the melt shop roof monitors (see current permit condition No. 2.1-A.4.b.). Nucor will re-confirm BACT, will conduct the required ambient analyses, and will re-permit the tundish pre-heaters as PSD sources as part of this application. Nucor requests that the same emission source IDs (ES11 and ES12) be used for the new tundish pre-heaters.

Railcar and/or Truck Unloading of Lime (ES93A) PSD Applicability

The railcar and/or truck unloading operations have existed at the site since plant construction in 1999, but for some reason are not listed as a PSD source in the permit. These operations are fugitive and have no active control device. Nucor is requesting to update the status of the currently permitted railcar and/or truck unloading of lime (ES93A) to reflect that it is a PSD affected source. This is because the source went through PSD in the original application.

Oxygen Plant PSD Applicability

Nucor is replacing the existing oxygen plant located at the Air Liquide location at the Cofield facility. New equipment will be installed and old equipment will be removed.

Nucor is providing a BACT analysis for the new emission sources (ES208, ES209, ES210, & I-44) and conducting the required ambient analyses. Nucor is requesting to permit the sources as PSD sources as part of this application.

LMF Preheaters PSD Applicability

Nucor is requesting to re-build two LMF preheaters (ES05 & ES06) at the Cofield facility. Nucor is providing a BACT analysis for these emission sources conducting the required ambient analyses. The existing LMF preheaters (ES05 & ES06) are subject to PSD, and Nucor is requesting to re-permit the sources as PSD sources.

VIII. Best Achievable Control Technology (BACT)

Selection of BACT

BACT is defined in 40 CFR 51.166 (b)(12) as follows:

> *An emissions limitation...based on the maximum degree of reduction for each pollutant... which would be emitted from any proposed major stationary source or major modification which the reviewing authority, on a case-by-case basis, taking into account energy, environment, and economic impacts and other costs, determines is achievable... for control of such a pollutant.*

As evidenced by the statutory definition of BACT, this technology determination must include a consideration of numerous factors. The structural and procedural framework upon which a decision should be made is not prescribed by Congress under the Act. This void in procedure has been filled by several guidance documents issued by the federal EPA. The only final guidance available is the October 1980 "Prevention of Significant Deterioration – Workshop Manual." As the EPA states on page II-B-1, "A BACT determination is dependent on the specific nature of the factors for that particular case. The depth of a BACT analysis should be based on the quantity and type of pollutants emitted and the degree of expected air quality impacts." (emphasis added). The EPA has issued additional DRAFT guidance suggesting the use of what they refer to as a "top-down" BACT determination method. While the EPA Environmental Appeals Board recognizes the "top-down" approach for delegated state agencies,[1] this procedure has never undergone rulemaking and as such, the "top-down" process is not binding on fully approved states, including North Carolina.[2] The Division prefers to follow closely the statutory language when making a BACT determination and therefore bases the determination on an evaluation of the statutory factors contained in the definition of BACT in the Clean Air Act.

As stated in the legislative history and in EPA's final October 1980 PSD Workshop Manual, each case is different and the state must decide how to weigh each of the various BACT factors. North Carolina is concerned that the application of EPA's DRAFT suggested "top-down" process will result in decisions that are inconsistent with the Congressionally intent of PSD and BACT. The following are passages from the legislative history of the Clean Air Act and provide valuable insight for state agencies when making BACT decisions.

> "*The decision regarding the actual implementation of best available technology is a key one, and the committee places this responsibility with the State, to be determined on a case-by-case judgment. It is recognized that the phrase has broad flexibility in how it should and can be interpreted, depending on site.*
>
> *In making this key decision on the technology to be used, the State is to take into account energy, environmental, and economic impacts and other costs of the application of best available control technology. The weight to be assigned to such factors is to be determined by the State. Such a flexible approach allows the adoption of improvements in technology to become widespread far more rapidly than would occur with a uniform Federal standard. The only Federal guidelines are the EPA new source performance and hazardous emissions standards, which represent a floor for the State's decision.*
>
> *This directive enables the State to consider the size of the plant, the increment of air quality which will be absorbed by any particular major emitting facility and such other considerations as anticipated and desired economic growth for the area. This allows the States and local communities judge how much of the defined increment of significant deterioration will be devoted to any major emitting facility. If, under the design which a major facility proposes, the percentage of increment would effectively prevent growth after the*

[1] See http://es.epa.gov/oeca/enforcement/envappeal.html for various PSD appeals board decisions including standard for review.
[2] North Carolina has full authority to implement the PSD program, 40 CFR Sec. 52.1770

proposed major facility was completed, the State or local community could refuse to permit construction, or limit its size. This is strictly a State and local decision; this legislation provides the parameters for that decision.

One of the cornerstones of a policy to keep clean areas clean is to require that new sources use the best available technology available to clean up pollution. One objection which has been raised to requiring the use of the best available pollution control technology is that a technology demonstrated to be applicable in one area of the country is not applicable at a new facility in another area because of the differences in feedstock material, plant configuration, or other reasons. For this and other reasons the Committee voted to permit emission limits based on the best available technology on a case-by-case judgment at the State level. [emphasis added]. This flexibility should allow for such differences to be accommodated and still maximize the use of improved technology."

As previously noted, the minimum control efficiency to be considered in a BACT assessment must result in an emission rate less than or equal to any applicable NSPS or Part 61 NESHAP emission rate for the source.

Potentially applicable emission control technologies were identified for each compound in this analysis using information from the following resources:

- RBLC (RACT/BACT/LAER Clearinghouse) database located on EPA's Technology Transfer Network in the EPA electronic bulletin board system,
- Various EPA reports on emissions control technologies,
- Various air pollution control technology vendors,
- Pending permit applications and issued permits for similar facilities, and
- Compilation of Air Pollution Emission Factors (AP-42) published by EPA.

Previously conducted BACT analyses from past PSD applications were reviewed and compared to the findings from the sources listed above and updated where noted in the following sections.

BACT Analysis – Electric Arc Furnace, Ladle Metallurgical Furnace, Slab Caster, & Melt Shop Fugitive Emissions

The electric arc furnace (EAF) continuously receives scrap metal (iron carbide, direct reduced iron, and other scrap substitutes), pebbled lime, and coke and melts these into molten steel. A direct shell evacuation (fourth hole duct) system captures air pollutant emissions from the EAF shell and ducts the emissions to a baghouse (CD01). Fugitive emissions from the EAF and associated operations are collected with a roof exhaust/canopy hood system and vented to the baghouse. Particulate matter (PM) collected in the baghouse is conveyed to a baghouse dust silo which is ducted to the melt shop baghouse. Subsequent to melting, the molten steel is conveyed to the ladle metallurgy furnace (LMF) where additional alloys are added to the molten metal and the metal is mixed to meet required steel output specifications. The temperature of the molten steel is also adjusted at the LMF prior to continuous casting. These operations are conducted in a ladle. Ninety-nine percent of the fumes generated at the LMF are captured using a fourth hole evacuation system and vented to the common melt shop baghouse. The remaining one percent of the fumes from the LMF is considered fugitive and is exhausted through the roof mono-vent. After the temperature and composition of the steel is adjusted, it is transferred from the ladle to the caster aisle and tapped into a tundish and is then conveyed to a continuous caster which utilizes a water-cooled mold to produce a continuous slab of steel. Ninety-eight percent of the emissions from the caster are captured and vented to the common melt shop baghouse. The remaining two percent of the emissions are considered fugitive and exhaust through the roof mono-vent.

Supporting operations in the melt shop include skull reduction, torch and lancing operations, ladle and tundish pre-heaters, ladle and tundish dryers, ladle and tundish refractory tearout/lining operations, and tundish nozzle preheaters. The tundish dryers are natural gas fired burners which cure new refractory material lining on the inside of the tundish. The tundish pre-heaters also utilize natural gas as a fuel. The ladle dryers utilize natural gas fired burners to cure new refractory material lining to the inside of the ladle. The ladle preheaters also combust natural gas. Finally, the tundish nozzle preheaters combust natural gas. Propane may be used, if necessary, for combustion in these sources. Emissions

from these supporting operations are ultimately exhausted to the atmosphere via the roof mono-vent. Subsequent to casting, the steel slabs are cut into sections and conveyed to the reheat furnace. This furnace uses natural gas as a fuel to raise the temperature of the sections to the proper rolling temperature. Low NOx burners are used. Exhaust from the reheat furnace is ducted to a stack. The slabs having been normalized to the proper temperature are run through a high pressure water descaler and then rolled to the desired dimensions by the hot rolling mill. The sized steel is then cooled by conveying across a cooling bed, straightened, cut to length, and shipped or stored.

Slag pots are used to transport molten slag from the EAF to the slag processing area. PM emissions from slag handling are associated with slag pot dumping, screening and crushing operations, storage piles, slag cutting, and unpaved roadways. Emissions of fugitive PM from slag dumping and processing and storage piles are controlled by limited drop heights and the application of water. Emissions from the unpaved roadways are minimized through the application of an asphaltic emulsion, water application, and posted speed limits.
Emissions from the EAF are limited by BACT in Permit Condition 2.1-A.4.a. and b. Emission limits were set for the baghouse (CD01) controlling the EAF (ES01), the Ladle Metallurgy Furnace (ES02), and the Continuous Slab Caster (ES03) and are contained in 2.1-A.4.a. Fugitive emissions limits for the same sources as well as the non-vented natural gas combustion sources (ES05 through ES15, ES94, and ES106), which are vented via the Melt Shop Roof Monitors (EP03 and EP04) are contained in 2.1-A.4.b.

Nucor has made several changes to sources in the melt shop since the last PSD analysis was performed. DAQ was previously notified of the changes listed below:

- Increase of throughput to 350 tph (includes EAF, LMF, and Caster) in 2009;
- Addition of lime injection system burners (ES203) in 2015; and
- Replacement of the oxygen and carbon distribution system in 2016.

In this application, Nucor is notifying DAQ of an additional proposed change – the addition of Smart Arc for process optimization.

These proposed changes did not trigger PSD, as Nucor is proposing to implement these changes to improve the EAF energy efficiency, and emissions will remain the same or likely decrease. However, as discussed previously, Nucor is voluntarily performing a BACT analysis on the EAF at the Cofield facility. Because the changes that have occurred since the previous PSD was performed on the EAF, in lieu of a "top-down" BACT analysis, Nucor is performing a general analysis of the current BACT limits in the context of actual emissions, comparisons to similar facilities in the RBLC, and comparison to requirements in federal regulations. BACT for the EAF has not changed and the same BACT results would be attained with another top down BACT analysis.

Carbon Monoxide (CO)
CO is emitted as a byproduct of incomplete combustion from the following potential sources – charged and injected carbon, scrap steel, electrodes, and "foaming slag" operating practice. EAFs generate CO as a result of oxidation of carbon introduced into the furnace charge to refine the steel and as a result of the sublimation/oxidation of the carbon electrode.

Emissions from Baghouse:
The current BACT limit for the EAF and melt shop emissions via the baghouse is 2.6 lb CO per ton of steel (or 2,847 tons per consecutive 12-month period). Stack test results from the past 10 years were reviewed and it was found that the maximum CO emitted during testing is over 90% of the current BACT limit. As a reminder, the CO PSD BACT limit was increased from 2.3 to 2.6 lb CO per ton of steel in 2011. Additionally, the RBLC was reviewed and it was found that the current BACT limit is within the range of current CO BACT limits for other EAF processes and the control method of Direct Shell Evacuation is consistent with the level of control at similar facilities. The RBLC search is included in Attachment II. Therefore, Nucor is requesting to retain the current BACT limit of 2.6 lb/ton. The NCDAQ agrees with this BACT assessment.

Fugitive Emissions:
The current BACT limit for fugitives from the EAF and melt shop is 29.17 lb CO per hour (or 116.4 tons per consecutive 12-month period).

A review of the RBLC for the processes associated with fugitive emissions shows that good combustion practices, the use of natural gas as fuel, and the use of Direct Shell Evacuation for the EAF are controls currently in use by other similar facilities. Nucor utilizes Direct Shell Evacuation for the EAF, as well as only using natural gas and good combustion practices for the combustion sources.

Nucor is requesting to update the current BACT limit for fugitive emissions, as there have been combustion sources added that vent to the roof monitors, an increase in melt shop throughput since the last PSD BACT limit calculation, and updated stack tests (from 2010 PSD application) available since the last BACT limit calculation (ES106 and ES202). Nucor is requesting a BACT limit of 108.1 tpy, which is less than the current BACT limit. This is within the range of current CO BACT limits for sources at similar facilities, as seen in Attachment II. The NCDAQ agrees with this BACT assessment.

Nitrogen Oxides (NOx)
NOx is formed from the chemical reaction between nitrogen and oxygen at high temperatures. NOx formulation occurs by different mechanisms. In the case of EAF, NOx predominantly forms from thermal dissociation and subsequent reaction of nitrogen and oxygen molecules in the combustion air. This mechanism of NOx formation is referred to as thermal NOx. The other mechanisms of NOx formation such as fuel NOx (due to the evolution and reaction of fuel-bound nitrogen compounds with oxygen) and prompt NOx (due to the formation of HCN followed by oxidation to NOx) are thought to have lesser contributions to NOx emissions from EAFs.

Emissions from Baghouse:
The current BACT limit for the EAF and melt shop emissions via the baghouse is 0.36 lb NOx per ton of steel (or 394.2 tons per consecutive 12-month period). Stack test results from the past 10 years were reviewed and it was found that the maximum NOx emitted during testing is over 90% of the current BACT limit. Additionally, the RBLC was reviewed and it was found that the current BACT limit is within the range of current NOx BACT limits for other EAF processes at similar facilities. The RBLC search is included in Attachment II. The BACT limit for Evraz Rocky Mountain located in Colorado is 0.28 lb/ton of steel achieved using process controls. After consultation with the Colorado Department of Health – Air Pollution Control Division, it is understood that the facility replaced two older furnaces with a long history of violations with a new furnace in 2005. In early 2000, the old furnaces were having compliance issues and EPA initiated an enforcement action. The facility was under a Federal Special Order by Consent (SOC) to replace the older furnaces along with many other specific upgrades. The BACT limit for GERDAU MACSTEEL, Inc. is 0.20 lb/ton of steel achieved through real time process optimization and using oxy-fuel burners. After consultation with Michigan Department of Environmental Quality – Air Quality Division, it is understood that the furnace is newer and uses burners unlike those at Nucor. GERDAU is also located less than 100 kilometers from the Canadian border. Therefore, Nucor is requesting to retain the current BACT limit of 0.36 lb/ton. Because Nucor is not requesting a change to the existing BACT limit, the NCDAQ agrees with this BACT assessment.

Fugitive Emissions:
The current BACT limit for fugitives from the EAF and melt shop is 9.6 lb NO_2 per hour (12-month hourly average).

A review of the RBLC for the processes associated with fugitive emissions shows that good combustion practices and low-NOx burners are controls currently in use by other similar facilities. Nucor utilizes both good combustion practices and low-NOx burners for these sources.

Nucor is requesting to update the current BACT limit for fugitive emissions, as there have been combustion sources added that vent to the roof monitors (ES106 and ES202) and an increase in melt shop throughput since the last BACT limit calculation. Nucor is requesting a BACT limit of 51.3 tpy. This is within the range of current

NOx BACT limits for sources at similar facilities, as seen in Attachment II. The NCDAQ agrees with this BACT assessment.

Particulate Matter (TSP/PM10/PM2.5)

The EAF operates in a mixed mode – the first heat is traditionally charged in a batch mode and the remaining heats are charged through the use of the CONSTEEL conveyor/preheating system whereby a more sustained furnace feed can be maintained. The CONSTEEL process is a unique method of charging the EAF with a molten matrix of raw materials which will enable the furnace to operate at the desired production capacity. The Nucor process is configured such that after initial charging by a clam shell charge bucket to develop a molten heel, the EAF receives a continuous charge feed via the CONSTEEL process. The molten matrix is conveyed to the EAF by the CONSTEEL conveyor system, while hot off-gases from the EAF are expelled in a countercurrent manner, thus, preheating the EAF input charge. In both modes of operation, scrap steel and scrap substitutes such as direct reduced iron are charged, melted and tapped. During normal operation, cold scrap metal and scrap substitutes, coke, lime, and dolomite lime are charged into the brick-lined shell powered by a high-powered transformer and oxygen, carbon, and natural gas lances. After charging the furnace, the lid or roof of the EAF is swung into position and a large electrical potential is applied to the carbon electrodes. The combination of the heat form the arcing process, oxygen lances, carbon values in charge and injection carbon, scrap, and various scrap substitutes melt the scrap and scrap substitutes into molten steel. Initially, the exit gas will be relatively cool, around 250F. As the scrap begins to melt, the temperature of the exhaust gas from the EAF will increase appreciably. When the melting is complete and oxygen lancing is performed, the temperature of the exhaust gas stream can approach 3,000° F, which is approximately the temperature of the molten steel.

The dust collection equipment for the EAF baghouse consists of a negative pressure, reverse-air type multi-compartment baghouse. Each module contains multiple spun polyester bags and/or Goretex^{TM}, with all necessary bag cleaning mechanisms, gas flow control, and collected material transfer and removal equipment. The design of the multi-compartment EAF baghouse allows for on-line maintenance and cleaning. The air moving mechanism for the system consists of multiple blowers and screw conveyors. The collected dust is pneumatically conveyed to a dust storage silo for off-loading. The silo is vented to the reverse air fans for purposes of material recovery and to minimize particulate emissions to the atmosphere.
Particulate matter (TSP/PM_{10}/$PM_{2.5}$) is emitted as both filterable and condensable particulate matter.

Emissions from Baghouse:

Particulate matter (TSP/PM_{10}/$PM_{2.5}$) is emitted from the EAF as both filterable and condensable particulate matter. Nucor is subject to NSPS AAa and NESHAP YYYYY, which requires that exhaust from the EAF control device cannot contain in excess of 0.0052 gr/dscf of filterable PM. The exit gran loading of 0.0052 gr/dscf is the current PM_{10}/$PM_{2.5}$ BACT limit for the EAF and melt shop emissions via the baghouse for filterable and condensable PM (and not just filterable PM). Because this BACT limit corresponds with the NSPS and NESHAP filterable PM limit, Nucor is not proposing to change the BACT limit. Additionally, this limit is consistent with other BACT limits found in the RBLC.

The filterable PM_{10}/$PM_{2.5}$ BACT limit in the current permit is 0.0018 gr/dscf. This limit is on the lower end of filterable PM limits at other similar facilities listed in the RBLC. The level of control, a baghouse, is also consistent with controls at other similar facilities. Therefore, Nucor is requesting to retain the filterable PM limit for the EAF.

The RBLC searches for total PM and filterable PM are included in Attachment II. Because Nucor is not requesting a change to the existing BACT limit, the NCDAQ agrees with this BACT assessment.

Fugitive Emissions:

The current BACT limit for fugitives from the EAF and melt shop is 4.21 lb PM_{10} (filterable and condensable) per hour and 3.44 lb $PM_{2.5}$ (filterable and condensable) per hour.

A review of the RBLC for the processes associated with fugitive emissions at the Cofield facility shows that baghouses are generally used. Nucor utilizes a baghouse for the melt shop, but the sources included under the fugitive BACT limit are either true fugitives or as a result of non-vented natural gas combustion sources and therefore are not controlled by the baghouse.

Nucor is requesting to update the current BACT limit for fugitive emissions, as there have been combustion sources added that vent to the roof monitors (ES106 and ES202) and an increase in melt shop throughput since the last PSD BACT limit calculation. Nucor is requesting a BACT limit of 19.8 tpy (filterable and condensable for both PM_{10} and $PM_{2.5}$). This is within the range of current $PM_{10}/PM_{2.5}$ BACT limits for sources at similar facilities, as seen in Attachment II. The NCDAQ agrees with this BACT assessment.

Sulfur Dioxide (SO_2)

The SO_2 emissions from the EAF occur due to the sulfur content of the raw materials charged in the EAF, materials blown into the foaming slag process, and the sulfur content of oil on the scrap metal.

Emissions from Baghouse:

The current BACT limit for the EAF and melt shop emissions via the baghouse is 0.35 lb SO_2 per ton of steel (or 383.25 tons per consecutive 12-month period). Stack test results from the past 10 years were reviewed and it was found that the maximum SO_2 emitted during testing is only 90% of the current BACT limit. Additionally, the RBLC was reviewed and it was found that the current BACT limit is within the range of current SO_2 BACT limits for other EAF processes and the control method of a scrap management plan is consistent with the level of control at similar facilities. The RBLC search is included in Attachment II. Therefore, Nucor is requesting to retain the current BACT limit of 0.35 lb/ton. The NCDAQ agrees with this BACT assessment.

Fugitive Emissions:

The current BACT limit for fugitives from the EAF and melt shop is 1.86 lb SO_2 per hour (6.6 tons per consecutive 12-month period).

A review of the RBLC for the processes associated with fugitive emissions shows that the use of natural gas as fuel is the only control method currently in use by other similar facilities. Nucor utilizes only natural gas for the non-vented combustion sources included in the emissions from the roof monitors.

Nucor is requesting to update the current BACT limit for fugitive emissions, as there have been combustion sources added that vent to the roof monitors (ES106 and ES202), an increase in melt shop throughput since the last PSD BACT limit calculation, and an update in emission factors for SO_2 since the last BACT limit calculation. Nucor is requesting a BACT limit of 4.4 tpy, which is less than the current BACT limit. This is within the range of current SO_2 BACT limits for sources at similar facilities, as seen in Attachment II. The NCDAQ agrees with this BACT assessment.

Volatile Organic Compounds (VOC)

VOC emissions from the EAF occur when organic compounds such as oil or paint present in the scrap are volatilized.

Emissions from Baghouse:

The current BACT limit for the EAF and melt shop emissions via the baghouse is 0.13 lb VOC per ton of steel (or 142.4 tons per consecutive 12-month period). The RBLC was reviewed and it was found that the current BACT limit is within the range of current VOC BACT limits for other EAF processes and the control method of a scrap management plan is consistent with the level of control at similar facilities. The RBLC search is included in Attachment II. Therefore, Nucor is requesting to retain the current BACT limit of 0.13 lb/ton. The NCDAQ agrees with this BACT assessment.

Fugitive Emissions:
The current BACT limit for fugitives from the EAF and melt shop is 7.6 tons VOC per consecutive 12-month period. Nucor is requesting to increase the BACT limit due to updated methods of VOC calculation and additional sources being vented through the roof monitors, as described previously.

A review of the RBLC for the processes associated with fugitive emissions shows that good combustion practices, the use of natural gas as fuel, and the use of Direct Shell Evacuation for the EAF are controls currently in use by other similar facilities. Nucor utilizes Direct Shell Evacuation for the EAF, as well as only using natural gas and good combustion practices for the combustion sources.

Nucor is requesting to update the current BACT limit for fugitive emissions, as there have been combustion sources added that vent to the roof monitors (ES106 and ES202), an increase in melt shop throughput since the last PSD BACT limit calculation, and recent guidance from corporate on how to calculate melt shop fugitive emissions since the last BACT limit calculation. Nucor is requesting a BACT limit of 19.4 tpy. This is within the range of current VOC BACT limits for sources at similar facilities, as seen in Attachment II. The NCDAQ agrees with this BACT assessment.

Lead (Pb)
Lead emissions from the EAF occur due to the composition of the scrap, deoxidizing agents, fluxes, and alloys.

Emissions from Baghouse:
The current BACT limit for the EAF and melt shop emissions via the baghouse is 0.0016 lb of lead per ton of steel (or 1.75 tons per consecutive 12-month period). The RBLC was reviewed and it was found that the current BACT limit is within the range of current Pb BACT limits for other EAF processes and the control method using a baghouse is consistent with the level of control at similar facilities. The RBLC search is included in Attachment II. Therefore, Nucor is requesting to retain the current BACT limit of 0.0016 lb/ton. The NCDAQ agrees with this BACT assessment.

Fugitive Emissions:
The current BACT limit for fugitives from the EAF and melt shop is 0.04 lbs lead per hour (3-month hourly average).

A review of the RBLC for the processes associated with fugitive emissions does not show any entries for lead.

Nucor is requesting to update the current BACT limit for fugitive emissions, as there have been combustion sources added that vent to the roof monitors (ES106 and ES202) and an increase in melt shop throughput since the last PSD BACT limit calculation. Nucor is requesting a BACT limit of 0.009 tpy, which is less than the current BACT limit. This is within the range of current lead BACT limits for sources at similar facilities, as seen in Attachment II. The NCDAQ agrees with this BACT assessment.

BACT Analysis – Combustion Byproduct Emissions

The combustion byproduct emissions from the following external combustion sources are evaluated in the following BACT analysis:

Oxygen vaporizer (ES201)
Car bottom furnace (ES202)
Lime injection system burners (ES203)
Plasma shear with baghouse (ES205)
Burning bed with baghouse (ES206)
Temporary boiler (ES204)
Plasma shear – normalizing line (ES108) with baghouse (CD09)
Plasma torch – normalizing line (ES109) with baghouse (CD09)

Plasma shear – Q & T line (ES110) with baghouse (CD10)
Plasma torch – Q&T line (ES111) with baghouse (CD10)
Normalizing furnace (ES117)
Tempering furnace (ES97)
Tundish pre-heaters (ES11 & ES12)

All combustion sources fire natural gas. Emissions from the Tempering Furnace (ES97) did not change and therefore the original BACT analysis, included in Appendix F remains effective. Combustion byproduct emissions of CO and NOx are evaluated in this analysis. No other pollutants require a BACT analysis due to low annual emissions.

In this application, Nucor is requesting to replace the Tundish Pre-heaters (ES11 & ES12), which are 10 MMBtu/hr with low-NOx burners. The replacement burners will be the same as the original burners and therefore no change to emissions is anticipated.

Carbon Monoxide (CO)

CO emissions from the external combustion sources primarily result from fuel combustion. Due to the relatively small emissions from natural gas combustion, the application of add-on controls is considered impractical and will be precluded from further consideration in this BACT analysis. A review of the RBLC database did not indicate the application of add-on control alternatives for CO control from similarly sized combustion sources.

Nucor proposes the use of natural gas and good combustion practices as BACT for the external combustion sources. The proposed BACT is consistent with similar entries in the RBLC database. The NCDAQ agrees with this BACT assessment.

Nitrogen Oxides (NOx)

The formation of NO_x is determined by the interaction of chemical and physical processes occurring within the flame zone of the furnace. There are two principal forms of NO_x designated as "thermal" NO_x and "fuel" NO_x. Thermal NO_x formation is the result of oxidation of atmospheric nitrogen contained in the inlet gas in the high-temperature, post-flame region of the combustion zone. The major factors influencing thermal NO_x formation are temperature, concentrations of combustion gases (primarily nitrogen and oxygen) in the inlet air and residence time within the combustion zone. Fuel NO_x is formed by the oxidation of fuel-bound nitrogen. NO_x formation can be controlled by adjusting the combustion process and/or installing post-combustion controls.

Due to the relatively small emissions from natural gas combustion, the application of add-on controls is considered impractical and will be precluded from further consideration in this BACT analysis. A review of the RBLC database indicates that low-NOx burners and good combustion practices are the prevalent controls used for NOx from external combustion sources. Further, the RBLC database did not indicate the application of add-on control alternatives for burners of similar size.

Nucor is therefore requesting that BACT for the combustion sources evaluated in this application be the use of natural gas as a fuel, the use of low-NOx burners on new combustion sources, and good combustion practices. The sole exception to the low-NOx burners is the oxygen plant, which is owned by Air Liquide and is a small source of NOx. The proposed BACT is consistent with similar entries in the RBLC database. The NCDAQ agrees with this BACT assessment.

BACT Analysis - Emergency Generators

The following emergency generators are evaluated in this BACT analysis:

Three natural gas fired emergency generators (ES103, 104, 105) from the 2011 application;
One diesel-fired emergency generator (ES107) from the 2011 application; and
One natural gas-fired emergency generator (ES116) from the 2012/2013 application.

The generators have the following permitted ratings:

Source ID	Fuel	Permitted Rating
ES103	Natural Gas	131 kW maximum power output
ES104	Natural Gas	300 kW maximum power output
ES105	Natural Gas	300 kW maximum power output
ES107	Diesel	20 kW maximum power output
ES116	Natural Gas	4.1 MMBtu/hr heat input rate; 300 kW maximum power output

The natural gas-fired emergency generators are limited to 500 hours per year. Add-on controls are impractical given the intermittent operation of these sources. Other than maintenance and readiness testing, the generators operate for emergency purposes only.

The generators are subject to MACT ZZZZ and either NSPS JJJJ or NSPS IIII. Requirements for emergency generators in these rules include emission standards for various pollutants based on the model year and rating of the generator, fuel requirements, maintenance, recordkeeping and reporting requirements. These requirements are incorporated in the current permit for each generator. Because NSPS standards reflect the accepted most stringent level of control, Nucor is requesting that BACT for all generators be set as follows: "The BACT for the emergency RICE is to comply with the Part 60 and 63 requirements." The NCDAQ agrees with this BACT assessment.

Nucor would likewise request that the BACT for RICE (ES80, ES81, ES82, ES84, and ES86 through ES90) be modified to reflect the BACT limit that was requested above. The current BACT limit of 100 hours per 12 consecutive month period is impractical. Emergency engines only have limits for non-emergency use (i.e. 100 hours) and have no limits for emergency use. The BACT limit as written applies at all times. A power outage of a week due to a storm would result in violation of the current BACT, but not MACT. The NCDAQ agrees with this BACT assessment.

BACT Analysis - Rolling Mill Operations

Operations from the rolling mill result in fugitive VOC emissions from the volatilization of oil and grease.

VOC emissions from oil and grease usage in the rolling/finishing/shipping operations are characterized as fugitive emissions. The rolling mill is contained in a building which covers an area of approximately 198,000 square feet. A system to duct minimal emissions from such a large area to a control device is considered impractical, and therefore best management practices are utilized to minimize the amount of oil and grease used and thereby minimize VOC emissions.

Nucor requests that BACT is set at the potential emissions from the rolling/finishing/shipping operations, 7.6 tons VOC per year. The NCDAQ agrees with this BACT assessment.

BACT Analysis - Unloading and Storage Operations

The following loading and storage operations result in emissions of particulate matter.

DRI barge unloading (ES112)
DRI storage silos (ES113a & b)
DRI day bins (ES114)

These sources are currently controlled by state-of-the-art pollution controls, baghouses, and thus no top-down BACT analysis has been performed. Nucor requests that the filterable $PM_{10}/PM_{2.5}$ BACT be set at 0.005 gr/dscf, which is the vendor guarantee for baghouses associated with the unloading and storage operations. The NCDAQ agrees with this BACT assessment. Inspection and maintenance requirements will apply for maintaining compliance with BACT limits.

BACT Analysis – Miscellaneous Operations

The miscellaneous operations listed below result in the emissions of particulate matter due to the cutting of steel and blasting of steel to remove contaminants.

Shot blaster with baghouse (ES115)
Plasma shear with baghouse (ES205)
Burning bed with baghouse (ES206)
Plasma shear – normalizing line with baghouse (ES108)
Plasma torch – normalizing line with baghouse (ES109)
Plasma shear – Q & T line with baghouse (ES110)
Plasma torch – Q&T line with baghouse (ES111)

These sources are currently controlled by state-of-the-art pollution controls, baghouses, and thus no top-down BACT analysis has been performed. Nucor requests that the filterable $PM_{10}/PM_{2.5}$ BACT be set at the lb/hr limits, which are based on vendor guarantees and control efficiencies of the baghouses controlling the above sources. Inspection and maintenance requirements will apply for maintaining compliance with BACT limits.

Table 1.0 BACT Limits for Miscellaneous Sources

Source ID	Source Description	BACT Limit, PM10/PM2.5, lb/hr
ES115	Shot Blaster	1.35E-01
ES205	Plasma shear with baghouse	1.20E-01
ES206	Burning bed with baghouse	1.93E-01
ES108	Plasma shear - normalizing line - with baghouse	5.49E-04
ES109	Plasma torch - normalizaing line - with baghouse	5.49E-04
ES110	Plasma shear - Q&T line - with baghouse	5.49E-04
ES111	Plasma torch - Q&T line - with baghouse	5.49E-04

BACT Analysis – Cooling Tower

The cooling tower for the roll mill (I-43) was included in the 2015 application, but is not yet installed. It emits particulate matter and is permitted as an insignificant source. The cooling tower will be controlled by a mist eliminator, which is the BACT level of control for similar permitted sources (ES38, ES39, ES40, & ES102). The facility therefore requests that it remain an insignificant activity.

BACT Analysis – Oxygen Plant (ID Nos. ES208, ES209, ES210, and I-44)

ES208 & ES209: The burners will be low-NOx, will fire exclusively natural gas, and will be operated with good combustion practices. Therefore, the new burners satisfy BACT.
ES210: The natural gas-fired generator will be limited to 500 hours per year and will be subject to NSPS JJJJ which reflects the most stringent level of control. Therefore, the new emergency generator will satisfy BACT.
I-44: The new cooling tower will be controlled by a mist eliminator, which is the BACT level of control.
The NCDAQ agrees with this BACT assessment.

BACT Analysis – Ladle Metallurgy Furnace Preheaters (ID Nos. ES05 and ES06)

The Cofield facility has five (5) natural gas direct-fired ladle metallurgy furnace (LMF) preheaters (ES05 through ES09). Nucor is requesting to re-build two (2) of the preheaters, ES05 and ES06. The preheaters will have the same currently permitted maximum heat input rate of 15 MMBtu/hr and will continue to have natural gas direct-fired burners. The re-built preheaters will have low-NOx burners. No changes to facility-wide potential emissions will occur as a result of this modification.

The burners will be low-NOx , will fire exclusively natural gas, and will be operated with good combustion practices. Therefore, the rebuilt preheaters satisfy BACT. The NCDAQ agrees with this BACT assessment.

The existing LMF preheaters are subject to a BACT limit. The modified LMF heaters will also be subject to a BACT limit.

IX. Air Quality Ambient Impact Analysis

When a significant emissions increase is projected to occur, PSD regulations [40 CFR 51.166 (k)] require an applicant to perform an ambient impact analysis to demonstrate that the proposed project will not:

1. Exceed any National Ambient Air Quality Standard (NAAQS) at any location during any time; and
2. Will not cause any allowable PSD increment to be exceeded.

Introduction

The PSD dispersion modeling analysis reviewed in this report, in general, followed all applicable federal and state rules, and modeling guidance. Modeling methodologies and interpretation of results followed both the modeling protocol submitted to NC DAQ on December 22, 2016 and the NC DAQ comments on the modeling protocol provided to Nucor Steel in a letter dated January 24, 2017.

A detailed description of the modeling methodology and inputs are described in the following sections. A summary of the modeling results is presented in the last section, PSD Air Quality Modeling Result Summary.

Project Description / Significant Emission Rate (SER) Analysis

Nucor Steel – Hertford County Steel Mill (Nucor) owns and operates a plate steel manufacturing plant (SIC 3312) at 1505 River Road, Cofield, NC. The facility is located on the southern bank of the Chowan River at the county line separating Hertford and Gates Counties. The voluntary PSD application for the proposed project under evaluation was originally received December 22, 2016, and two subsequent addendums were received July 5, and August 23, 2017.

Five separate and unrelated projects were evaluated voluntarily and modeled together by Nucor as one single project under Prevention of Significant Deterioration (PSD) Permit Program pursuant to North Carolina Regulation 15A NCAC 02D .0530 and U.S. EPA 40 CFR 51.166. Three projects were cited from permit applications previously submitted in 2011, 2012 (amended 2013), and 2015. The fourth project under review as proposed in the PSD application addendum received July 5, 2017 includes emission sources added to support the construction of an oxygen production plant. And the fifth project under review, as proposed in the addendum received August 23, 2017, includes rebuilding of two LMF heaters and requested changes to CAM requirements for the electric arc furnace. While Nucor has demonstrated that each project did not trigger PSD individually, with the voluntary PSD application submittal the consideration of all five projects as one project results in emission increases above the Prevention of Significant Deterioration (PSD) Significant Emission Rates (SER), as defined under 40 CFR 51.166(b)(23), for nitrogen oxides (NOx), particulate matter equal to or less than 10 micrometers diameter (PM_{10}), and particulate matter equal to or less than 2.5 micrometers diameter ($PM_{2.5}$). Therefore, as per 40 CFR 51.166(m)(1)(i)(a), an ambient air quality analysis of project emission impacts was performed by Nucor for NO_X, PM_{10}, and $PM_{2.5}$. Total suspended particulate (TSP) emissions above the SER were evaluated to demonstrate compliance with the State Ambient Air Quality Standards (SAAQS). The PSD modeling of project emissions also included modeling for carbon monoxide (CO), sulfur dioxide (SO_2), and lead (Pb). Additionally, NO_X and volatile organic compounds (VOCs) emission increases were evaluated in terms of precursor impacts on ozone formation. Table 1 shows the project emissions increases for all PSD pollutants evaluated.

Table 1 - Pollutant Netting Analysis

Pollutant	Annual Emission Rate tons/yr	Significant Emission Rate tons/yr	Ambient Review?
NO_x	69.11	40	**Y**
$PM_{2.5}$	15.64	10	**Y**
PM_{10}	20.7	15	**Y**
PM (TSP)	38.23	25	**Y**
SO_2	0.53	40	N****
VOC's **	13.32	40	**Y**
CO	75.37	100	N****
HF	0.0	3	N
Pb	0.00042	0.6	N****
H2SO4 ***	0.0	7	N

*** VOC is an ozone precursor evaluated under ozone analysis.*

**** No SIL or NAAQS exist; modeled by NC Toxics standards*

***** Ambient analysis conducted even though project emissions were less than SER.*

Class II Area Significant Impact Air Quality Modeling Analysis

A significant impact analysis was conducted for the pollutants shown in Table 1 that require PSD analysis and that have established Class II Area Significant Impact Levels (SIL). The modeling results were compared to the applicable Class II Area SIL as defined in the NSR Workshop Manual, NC DAQ memoranda, and EPA guidance to determine if a full impact air quality analysis would be required for that pollutant.

The modeling was based on project emission increases for all PSD pollutants. Emissions were modeled representing 8,760 hours per year facility operation with exception to the readiness testing conducted for 14 emergency engines. Emergency engines were modeled assuming one readiness testing per day constrained to the hours between 9 am to 5 pm. Thus, modeled project impacts shown in Table 2 identify worst case emergency engine testing for each pollutant and averaging period. Table 2 also shows the radius of the significant impact areas for NO_2, PM_{10}, and $PM_{2.5}$ where impacts from project emission increases were modeled above the SIL. Therefore, NAAQS and PSD Increment full impact analyses were conducted for these pollutants and averaging periods accordingly. The full impact analyses are discussed in the following section.

Project significant impacts above the NO_2, PM10, and PM2.5 SILs occur in both Hertford and Gates Counties. PSD Increment minor source baseline dates were established in Hertford County for NO2 and PM10 on September 10, 1998. However, Hertford County has not established a minor source baseline date for PM2.5, and therefore, will trigger the minor source baseline date for Hertford County as of September 12, 2017, when NC DEQ received the finalized PSD modeling and completed (revised) PSD application materials. Minor source baseline dates have not been established for any PSD pollutant in Gates County. Therefore, as a result of this PSD modeling evaluation, minor source baseline dates will be established in Gates County for NO_2, PM10, and PM2.5 based on the complete application modeling and materials received on September 12, 2017.

Table 2 - Class II Significant Impact Results (µg/m^3)

Pollutant	Averaging Period	Worst-Case Emergency Engine	Project Maximum Impact	Class II Significant Impact Level	Class II Significant Impact Area (km)
CO	1-hour	ES210	326.97	2000	N/A
	8-hour	ES210	93.03	500	N/A
SO2	1-hour	ES210	5.07	10	N/A
	3-hour	ES210	3.02	25	N/A
	24-hour	ES210	0.97	5	N/A
	Annual	ES210	0.16	1	N/A

Pollutant	Averaging Period	Worst-Case Emergency Engine	Project Maximum Impact	Class II Significant Impact Level	Class II Significant Impact Area (km)
NO2	1-hour	ES210	137.8	10	12.5
	Annual	ES105	3.1	1	1.6
PM10	24-hour	ES104	24.4	5	1.5
	Annual	ES210	5.9	1	
PM2.5	24-hour	ES210	7.8	1.2	3.5
	Annual	ES210	2.0	0.2	

Class II Area Tier 1 Screening Analysis for PM2.5 and Ozone Precursors

A Tier 1 screening analysis was conducted to evaluate project precursor emissions impacts on secondary formation of PM2.5 and ozone in Class II areas. The screening analysis was based on methodologies taken from EPA's draft *Guidance on the Development of Modeled Emission Rates for Precursors (MERPs) as a Tier I Demonstration Tool for Ozone and PM2.5 under the PSD Permitting Program* (December 2, 2016). MERPs are defined as the screening emission level (tpy) above which project precursor emissions would conservatively be expected to have a significant impact on secondary PM2.5 or Ozone formation. A MERP value is developed for each precursor pollutant from photochemical modeling validated by EPA and a "critical air quality threshold". The MERPs guidance relies on EPA's 2016 draft SILs for PM2.5 and ozone as the critical air quality threshold to develop conservative MERPs values. As such, NO_X and SO_2 project emissions were assessed by separately derived PM2.5 MERPs values, whereas NO_X and VOC project emissions were assessed by separately derived ozone MERPs values. PM2.5 and ozone MERPs values selected for Nucor were based on the most conservative values taken from Table 7.1 of the MERPs guidance that represent hypothetical sources located in the eastern U.S. The project impacts on secondary PM2.5 are determined by summing the SO_2 project emissions as a percentage of the SO_2 MERP with the NOX project emissions as a percentage of the NOX MERP, and comparing the total sum to a normalized total of 100%. The 100% value represents a dimensionless, normalized threshold for evaluating the combined impacts of NO_X and SO_2 emissions on secondary PM2.5 formation. Table 3 shows the 24-hour and annual SO_2 and NO_X project emissions along with representative and conservative MERPs values. The total of each project emissions quantity as a percentage of the MERPs values is also shown in the last column, and indicates project impacts on PM2.5 are below the 100% combined threshold.

Table 3 – MERPs Screening of PM2.5 Precursors

Secondary Pollutant	SO_2 Project Emissions (tpy)	SO_2 MERP (tpy)	NO_X Project Emissions (tpy)	NO_X MERP (tpy)	Total of % MERPs
24-hour PM2.5	0.53	628	69.11	2,295	3 %
Annual PM2.5	0.53	4,013	69.11	10,144	0.7 %

The situation is similar for ozone, where MERPs values were selected for NO_X and VOC precursors. The total percentage of project NO_X and VOC emissions to each 8-hour ozone MERP is compared to the dimensionless, normalized threshold of 100%. Table 4 shows the project NO_X and VOC emissions, selected NO_X and VOC MERPs for 8-hour ozone, and the total percentage of project emissions to MERPs. As shown, project impacts on 8-hour ozone were conservatively screened below the 100% threshold demonstrating that the project will not cause or contribute to a violation of the NAAQS.

Table 4 – MERPs Screening of Ozone Precursors

Secondary Pollutant	VOC Project Emissions (tpy)	VOC MERP (tpy)	NO_X Project Emissions (tpy)	NO_X MERP (tpy)	Total of % MERPs
8-hour Ozone	13.32	1,159	69.11	170	42%

Class II Area Full Impact Air Quality Modeling Analysis

A Class II Area NAAQS full impact analysis was conducted for 1-hour NO_2, 24-hour PM10, and 24-hour and annual PM2.5 based on project emissions impacts modeled above the SILs. The NAAQS analysis for NO_2, PM_{10}, and $PM_{2.5}$ included modeling of facility-wide potential emissions and nearby sources as determined by the 20D screening approach. An additional NAAQS analysis for lead (Pb) was also included by Nucor, and evaluated Nucor facility-wide Pb emission impacts. Model impacts from facility-wide and nearby source emissions were summed with monitored background concentrations and then compared to the NAAQS to demonstrate that project impacts would not cause or contribute to a violation of the NAAQS. Results of the NAAQS analysis is presented in Table 5. As shown, project impacts do not cause or contribute to a violation of the NAAQS.

Table 5 - Class II NAAQS Full Impact Analysis Results (µg/m³)

Pollutant	Averaging Period	Worst-Case Emergency Engine	Model Concentration	Monitor Background Concentration	Total Concentration	NAAQS
NO2	1-hour	ES90	139.46	30.10	169.56	188
	Annual	ES90	7.31	5.02	12.33	100
PM10	24-hour	ES80	28.69	24.00	52.69	150
PM2.5	24-hour	ES80	11.51	14.00	25.51	35
	Annual	ES80	3.72	6.90	10.62	12
Lead	Quarterly	All Engines	0.01	--	0.01	1.5

A Class II Area PSD Increment full impact analysis of annual NO_2, 24-hour and annual PM10, and 24-hour and annual PM2.5 was conducted to evaluate consumption of available PSD increment in Hertford and Gates Counties. Increment consumption for a given PSD pollutant is generally determined by modeling major and minor source emission increases occurring after the major source and minor source baseline dates, respectively. However, a conservative increment analysis can be based on modeling of potential emissions, because potential emissions are greater than any relevant emission increases occurring since the major and minor source baseline dates. Thus, Nucor conservatively assumed that potential emissions from the NO_2 and PM10 NAAQS modeling analyses represent emission increases occurring since the PSD increment major and minor source baseline dates, and furthermore, used those same NAAQS modeling results for comparison to the PSD increments for the same pollutants and averaging periods. The PM2.5 PSD increment full impact analysis was based on Nucor emission increases occurring since the PM2.5 major source baseline date, October 20, 2010. Nearby major sources of PM2.5 were screened from the 24-hour and annual PM2.5 increment analysis based on the 20D screening approach. Results of the increment analysis are presented in Table 6, and show the project will not cause or contribute to violation of the PSD increments within the SIA.

Table 6 - Class II PSD Increment Full Impact Analysis Results (µg/m³)

Pollutant	Averaging Period	Worst-Case Emergency Engine	Modeled Concentration	PSD Increment
NO2	Annual	ES90	7.31	25
PM10	24-hour	ES80	28.69	30

	Annual	ES80	8.52	17
PM2.5	24-hour	ES116	6.88	9
	Annual	ES210	2.04	4

Class I Area Significant Impact Air Quality Modeling Analysis

A significant impact screening analysis was conducted for the pollutants shown in Table 7 that require Class I Area PSD increment analysis and that have established Class I Area Significant Impact Levels (SIL). The modeling results were compared to the applicable Class I Area SIL as defined in the NSR Workshop Manual and EPA guidance to determine if a Class I full impact air quality analysis would be required for that pollutant. Modeled project emissions used in the Class I analysis were identical to those used in the Class II significance analysis except that all emergency engine emission increases were modeled without the 9 am to 5 pm operating restriction. AERMOD was selected to screen for modeled impacts at 50 km in all directions around the facility, consistent with screening methodology outlined in EPA guidance recently released with revisions to Appendix W in January 2017. As shown in Table 5, all modeled impacts were below Class I SILs.

Table 7 - Class I Significant Impact Results (µg/m^3)

Pollutant	Averaging Period	Project Maximum Impact	Class I Significant Impact Level
SO2	3-hour	0.079	1
	24-hour	0.011	0.2
	Annual	0.001	0.08
NO2	Annual	0.005	0.1
PM10	24-hour	0.051	0.32
	Annual	0.002	0.20
PM2.5	24-hour	0.046	0.27
	Annual	0.002	0.05

Class I Increment/Air Quality Related Values (AQRV) Regional Haze Impact and Deposition Analyses

The project includes significant emissions of pollutants with established Class I Area Increments or Deposition Analysis Thresholds. The project also includes significant emissions of visibility-impairing pollutants such as NO_X, SO_2, $PM_{2.5}$, and PM_{10}. Therefore, analysis of project impacts on Class I Area Air Quality Related Values (AQRVs) was required.

Federal Land Managers (FLMs) were notified of the PSD project following the pre-application meeting held on September 14, 2016 at NCDEQ Headquarters in Raleigh. Notification of the PSD project was transmitted via email from NCDAQ on September 14, 2016 to representatives of the U.S. Fish and Wildlife Service, U.S. Forest Service, and the National Park Service. FLMs did not respond to the email notification with any comments or requests for more information.

Nucor evaluated AQRV impacts based on screening guidance from the 2010 Federal Land Managers' (FLM) air quality related values work group (FLAG): phase I report. Under this guidance, impacts are screened by dividing the total annualized 24-hour emission increases (tpy) by the project distance (km) to the closest Class I Area. The annualized 24-hour emission increases include the sum of all AQRV pollutants, i.e., NO_X, SO_2, PM10, and H_2SO_4. The closest Class I area to the project was determined to be the Swanquarter Wilderness, located 114 km south of the steel mill. Accordingly, the AQRV emissions increase (Q) divided by the distance to Swanquarter (D) was calculated as: 89 tpy / 114 km = 0.78. The 2010 FLAG guidance indicates that a Q/D value of 10 or less demonstrates project emissions will have negligible impacts with respect to Class I AQRVs. Therefore, Nucor

projects evaluated under this PSD review show negligible impacts with respect to Class I AQRVs at Swanquarter, and other Class I areas farther away.

Non-Regulated Pollutant Impact Analysis (North Carolina Toxics and TSP)

The air toxics dispersion modeling analysis was conducted to evaluate ambient impacts from facility-wide toxic air pollutant (TAP) emissions rates (TPERs) from the project estimated to exceed those outlined in 15A NCAC 02Q .0711. The modeling of maximum-allowable TAPs emissions adequately demonstrates compliance with Acceptable Ambient Levels (AALs) outlined in 15A NCAC 02D.1104, on a source-by-source basis, for 1, 3 butadiene, acrolein, arsenic, benzene, beryllium, cadmium, soluble chromate compounds, formaldehyde, n-hexane, manganese, mercury, and nickel. The modeling establishes maximum-allowable emission limits for each TAP on a source-by-source basis. The modeled impacts from facility-wide TAPs emissions as a percentage of AALs are presented in Table 8. TAP emission limits were proposed to be the same as those modeled for non-MACT sources. Both MACT and non-MACT sources were modeled in the air toxics modeling analysis.

TAP emissions modeled for the proposed project are the result of facility-wide emissions from combustion, processing, and fugitive point and volume emission sources common to steel manufacturing. A total of 52 point sources and a total of 30 volume sources were modeled. Modeled TAPs emissions and release parameters were derived assuming 8,760 hours per year facility operations. Obstructed and/or non-vertical point source releases assumed an exit velocity of 0.01 m/s.

AERMOD (version 16216r) using one year (2007) of on-site meteorological data (surface) and Morehead City data (upper air) were used to evaluate impacts in both simple and complex terrain. The meteorological data used in the dispersion modeling analysis was prepared by Trinity Consultants and reviewed by NC DAQ. The meteorological data was processed using AERMET (version 16216) using the regulatory default "ADJ_U*" option. This option improves AERMOD modeling performance under low-wind, stable conditions. The ADJ_U* option was processed without on-site sigma-theta and sigma-phi turbulence parameters, as per EPA guidance. Direction-specific building downwash parameters, calculated using EPA's BPIP-PRIME program (04274), were used as input to AERMOD to determine building downwash effects on plume rise and effects on entrainment of stack emissions into the cavity and turbulent wake zones downwind of existing buildings. The building downwash analysis included 38 buildings in all. Receptors were modeled around the facility's property line at 25-meter intervals. Gridded receptors spaced every 100 meters were modeled in all directions out to approximately 3,500 meters from the property line. Building, source, and receptor elevations and receptor dividing streamline heights were calculated from 1-arc-second resolution USGS NED terrain data using the AERMOD terrain pre-processor AERMAP (version 11103). All model buildings, sources, and receptors were geo-located within the Universal Transverse Mercator (UTM) Zone 18 coordinate system based on the North American Datum of 1983 (NAD83).

Table 8.
Maximum Modeled Impacts from Potential Emissions
Nucor Steel – Hertford County Steel Mill, Cofield, NC

Pollutant	Averaging Period	Maximum Modeled Impacts % of AAL
1, 3 Butadiene	Annual	0.13 %
Acrolein	1-hour	3.09 %
Arsenic	Annual	3.33 %
Benzene	Annual	18.2 %
Beryllium	Annual	0.98 %
Cadmium	Annual	14.7 %
Soluble Chromate Compounds	24-hour	0.07 %
Formaldehyde	1-hour	16.7 %
n-Hexane	24-hour	0.08 %
Manganese	24-hour	0.84 %

Mercury	24-hour	4.35 %
Nickel	24-hour	0.11 %

Total suspended particulate (TSP) project emissions were estimated above the SER of 25 tpy as specified under 40 CFR 51.166(b)(23). While the TSP NAAQS was revised in 1987 to narrow focus and regulation of PM10, North Carolina State Ambient Air Quality Standards (SAAQS) currently still require evaluation of both PM10 and TSP separately in accordance with 15A NCAC 02D .0403. As such, Nucor modeled facility-wide TSP emissions using AERMOD and the same model setup as the TAPs modeling analyses to demonstrate compliance with the 24-hour (150 µg/m^3) and annual (75 µg/m^3) TSP SAAQS. Table 9 shows the results of the modeling analyses and that the modified facility-wide emissions impacts will not cause or contribute to a violation of the TSP SAAQS. Table 9 also indicates the worst-case emergency engine operating scenario where readiness testing occurs for one engine per day between 9 am and 5 pm.

Table 9 - Class II NAAQS Full Impact Analysis Results (µg/m^3)

Pollutant	Averaging Period	Worst-Case Emergency Engine	Modeled Concentration	SAAQS
TSP	24-hour	ES80	37.80	150
	Annual	ES80	11.91	75

Additional Impact Analysis

Additional impact analyses were conducted for ozone, growth, soils and vegetation, and visibility impairment.

Ozone Impact Analysis

The project VOC emissions are 13.32 tons per year and do not exceed the ozone SER of 40 tons per year for VOCs as specified in 40 CFR Part 51.166(b)(23)(i). Therefore, project VOC emissions impacts on ambient ozone levels were not analyzed. However, secondary ozone impacts from project VOC and NO_X emissions were assessed using the MERPs screening approach. MERPs screening for secondary ozone formation is discussed previously in this review report.

Growth Impacts

No secondary growth is proposed for the project.

Soils and Vegetation

The project impacts on soils and vegetation was analyzed by comparing the maximum modeled concentrations to secondary NAAQS and screening thresholds recommended in EPA's "A Screening Procedure for Impacts of Air Pollution Sources on Plants, Soils and Animals" (EPA-450/2-81-078). The modeled concentrations were well below the secondary NAAQS and screening thresholds. Therefore, little or no significant impacts are anticipated from the project to soils and/or vegetation. See PSD application Table 6-17 in the modeling report section for further details of the modeled project impacts compared to secondary NAAQS and screening thresholds.

Class II Visibility Impairment Analysis

The Class II visibility analysis was not required given the project emissions do not include significant amounts of visibility-impairing pollutants such as NO_X, SO_2, $PM_{2.5}$, or PM_{10}. Additionally, the project is not located within 10 km of an area protected from visibility impairment. Therefore, NC DAQ did not require the Class II Visibility Impairment Analysis.

PSD Air Quality Modeling Result Summary

Based on the PSD air quality ambient impact analysis performed, the proposed project will not cause or contribute to any violation of the NAAQS, Class II Area PSD increments, Class I Area PSD Increments, or any FLM AQRVs. Based on air toxics and TSP modeling analyses performed, the modified facility-wide emission impacts are expected

to be below state regulated AALs and the TSP SAAQS, respectively. A summary of the modeling results is presented in Table 10.

The review of the PSD analysis and air toxics analysis assumes the source parameters and pollutant emission rates used in the dispersion modeling analyses were correct.

Table 10 – Nucor Steel – Hertford County Steel Mill
PSD Air Quality Modeling Results

SER Evaluation

Pollutant	Annual E/R (Tons)	SER (Tons/yr)	PSD Review? (Y/N)				
NO_x	17.60	40	N				
$PM_{2.5}$	-122.91	10	N				
PM_{10}	-141.34	15	N				
PM	-8.74	25	N				
SO_2	-789.02	40	N				
CO	1,713.96	100	Y				
Ozone (VOCs)	124.04	40	Y				
Fluorides	-1.10	3	N				
Pb	-0.03	0.6	N				
H2SO4	-24.02	7	N				
CO2e	-2,157,188	75,000	N				

Class II Area SIL Analysis

Pollutant	Averaging Period	Maximum Impact (µg/m^3)	SIL (µg/m^3)	SIL Exceeded			
CO	1-hour	326.97	2000	N			
	8-hour	90.03	500	N			
SO2	1-hour	5.07	10	N			
	3-hour	3.02	25	N			
	24-hour	0.97	5	N			
	Annual	0.16	1	N			
NO2	1-hour	137.8	10	**Y**			
	Annual	3.1	1	**Y**			
PM10	24-hour	24.4	5	**Y**			
	Annual	5.9	1	**Y**			
PM2.5	24-hour	7.8	1.2	**Y**			
	Annual	2.0	0.2	**Y**			

Class II NAAQS Analysis

Pollutant	Averaging Period	Maximum Onsite & Offsite Source Impacts (µg/m^3)	Back Ground Conc (µg/m^3)	Total Impact (µg/m^3)	NAAQS (µg/m^3)	% NAAQS

NO2	1-hour	139.46	30.10	169.56	188	90.2 %
	Annual	7.31	5.02	12.33	100	12.3 %
PM10	24-hour	28.69	24.00	52.69	150	35.1 %
PM2.5	24-hour	11.51	14.00	25.51	35	72.9 %
	Annual	3.72	6.90	10.62	12	88.5 %
Lead	Quarterly	0.01	--	0.01	1.5	0.1 %

Class II PSD Increment Analysis

Pollutant	Averaging Period	Maximum Onsite & Offsite Source Impacts (µg/m³)	PSD Increment (µg/m³)	% PSD Increment		
NO2	Annual	7.31	25	29.2 %		
PM10	24-hour	28.69	30	95.6 %		
	Annual	8.52	17	50.1 %		
PM2.5	24-hour	6.88	9	76.4 %		
	Annual	2.04	4	51.0 %		

Class I SIL Analysis

Pollutant	Averaging Period	Maximum Impact (µg/m³)	SIL (µg/m³)	SIL Exceeded		
SO2	3-hour	0.079	1	N		
	24-hour	0.011	0.2	N		
	Annual	0.001	0.08	N		
NO2	Annual	0.005	0.1	N		
PM20	24-hour	0.051	0.32	N		
	Annual	0.002	0.20	N		
PM2.5	24-hour	0.046	0.27	N		
	Annual	0.002	0.05	N		

Total Suspended Particulates (TSP)

Pollutant	Averaging Period	Maximum Impact (µg/m³)	SAAQS (µg/m³)	% SAAQS			
TSP	24-hour	37.80	150	25.2 %			
	Annual	11.91	75	15.9 %			

NC Toxic Pollutants Impacts

Pollutant	Averaging Period	Maximum Impact (µg/m³)	AAL (µg/m³)	Modeled Impact as % of AAL		
1, 3 Butadiene	Annual	5.80E-04	0.44	0.13 %		
Acrolein	1-hour	2.47	80	3.09 %		
Arsenic	Annual	7.00E-05	2.1E-03	3.33 %		
Benzene	Annual	2.18E-02	0.12	18.2 %		
Beryllium	Annual	4.00E-05	4.10E-03	0.98 %		

Cadmium	Annual	8.10E-04	5.50E-03	14.7 %		
Soluble Chromate Compounds	24-hour	4.20E-04	0.62	0.07 %		
Formaldehyde	1-hour	25.06	150	16.7 %		
n-Hexane	24-hour	0.85	1,100	0.08 %		
Manganese	24-hour	0.26	31	0.84 %		
Mercury	24-hour	2.61E-02	0.60	4.35 %		
Nickel	24-hour	6.75E-03	6	0.11 %		

X. Compliance Assurance Monitoring (CAM)

Permit T21 contains Compliance Assurance Monitoring (CAM) requirements for the direct-shell evacuation control (DEC) system and the melt shop baghouse (CD01) which control the EAF (ES01) in Permit Condition 2.1-A.5. These requirements assure compliance with NSPS AAa and PSD emission standards for particulate matter (PM) and visible emissions (as measured by opacity) for ES01. The permit condition also incorrectly states that CAM requirements assure compliance with MACT YYYYY. As discussed further below, Nucor requests to revise this permit condition to reflect updates in the operation of the control devices and to correct the applicability as currently stated.

The current monitoring requirements of this permit condition are summarized below:

Conduct monitoring of the opacity from CD01 via the associated Continuous Opacity Monitoring System (COMS) in accordance with 40 CFR 60, Appendix B, Performance Specification I (PSI), and Appendix F, Procedure 3
If visible emissions from CD01 with opacity greater than or equal to 2% (six-minute average) are observed then an excursion has occurred.
If the total duration of excursion is greater than or equal to 5% of ES01 operating time during any consecutive 6-month period, then a Quality Improvement Plan (QIP) shall be developed.

The EAF is subject to NSPS AAa, which has emission standards for the exit from the control device, summarized below:

PM from the control device is less than or equal to 12 mg/dscm (0.0052 gr/dscf); and
Opacity from the control device is less than 3%.

As discussed with DAQ on July 27, 2017, an excursion as defined by the CAM permit condition is approximately 66.7% of the opacity as is allowed by the NSPS. Therefore, if the COMS records opacity from CD01 at 66.7% of the NSPS emission standard for 5% of more of the operating time, then Nucor is required to develop a QIP and maintain/submit associated records and reports.

Nucor has recently had some opacity readings that are greater than 2% that have triggered a QIP. However, there have been no instances in which there is a violation of the 3% NSPS opacity limit. Based on the discussion on July 27, 2017, Nucor is presenting data in this addendum to have the CAM limit be set at the NSPS limit of 3%.

As the excursion level for the CAM permit condition that triggers the development of a QIP was developed prior to the installation of the fully functional COMS per Part 60, Nucor is requesting that DAQ review the excursion level in conjunction with the most recent stack tests available and revise the excursion level for the CAM permit condition. Nucor has reviewed and analyzed the stack test data from CY 2016 and CY 2017 and has concluded the following:

1) The PM emissions from CD01 are well below the PM emission limit required by NSPS Subpart AAa (0.0052 gr/dscf);
2) The PM emissions from CD01 are well below the PM emission limit required by BACT (0.0018 gr/dscf – filterable and 0.0052 gr/dscf – filterable + condensable);
3) The opacity during the testing as measured by the COMS ranged from approximately 1 to 1.7%. The total PM (filterable + condensable) measured over the six runs averaged 0.0025 gr/dscf with a 99% confidence interval

ranging from 0.0023 to 0.0027 gr/dscf. The filterable PM measured over the six runs averaged 0.0007 with a 99% confidence interval ranging from 0.0006 to 0.0008 gr/dscf.

Figure 1 found in the application summarizes this data, where the opacity percent is the average as measured by the COMS during each test run and PM is as measured by EPA Method 5 and 202 during each of 6 runs during the two rounds of annual stack testing.

Supporting data for Figure 1 from the stack tests and COMS is included in the application. As is shown in Figure 1, throughout the variation of the opacity during the stack test runs, both the total PM and the filterable PM remain well below the respective limits.

The data contained in Figure 1 supports that with opacity of 3% or less the facility will continue to comply with the PM limits. Therefore, Nucor is requesting that the excursion level contained in Permit Condition 2.1-A.5.c.i. be revised to read:

"i. If visible emissions from the Melt Shop baghouse (ID No. CD01) with opacity greater than or equal to 3 percent (six-minute average) are observed then an excursion has occurred."

Additionally, Nucor is requesting to revise the language in Permit Condition 2.1-A.5.a. to remove the reference to MACT YYYYY, as follows:

"a. For the direct-shell evacuation control (DEC) system and the Melt Shop baghouse (ID No. CD01), the Permittee shall comply with 40 CFR Part 64 pursuant to 15A NCAC 2D .0614 to assure that the associated Electric Arc Furnace (EAF)(ID No. ES01) complies with the emission limits of 15A NCAC 2D .0524 (i.e., NSPS AAa) and 15A NCAC 2D .0530.

XI. Changes to Stack Testing Requirements

A. The DAQ received a letter dated October 1, 2018 from Mr. Robert McCracken requesting to have existing testing requirements changed. As stated in the letter, the requests are associated with the Electric Arc Furnace (EAF) and other emission sources within the melt shop that vent to the melt shop baghouse and the reheat furnace.

The current permit has the following testing for the above referenced emission sources:

1. NC toxic air pollutant (TAP) testing at the melt shop baghouse stack on a once per permit term basis for the EAF and other emission sources within the melt shop per Permit Condition No. 2.2-A.1.b. Nucor requests to have TAP testing removed from the permit for the EAF and the other emission sources that vent to the melt shop baghouse for the following reasons:
   a. NC DAQ regulation 15A NCAC 02Q .0702(a)(27)(B) was amended to specify that any source that is subject to a Part 63 requirement is exempt from air toxics provided a demonstration can be made that there is no unacceptable health risk. Based on a summary of the facility wide acceptable ambient level (AAL) impacts resulting from recent air dispersion modeling outlined above, the highest concentration of the triggered TAPs from the facility js 18.2% of the AAL for benzene. Thus, there is no unacceptable risk from the facility, which means there is no unacceptable risk for the melt shop baghouse stack.
   b. Nucor has tested TAPs at the baghouse stack multiple times since the facility commenced operation in 2000. The TAP test results have always complied with the permit limits in Section 2.2 A.1.

c. The DAQ agrees with the above rationale and will remove the TAP testing on a once per term basis in Section 2.2 A.1.b.

2. Criteria pollutant testing at the melt shop baghouse stack on an annual basis for the EAF and other emission sources within the melt shop per Permit Condition No, 2.1 A.4.d. Nucor requests that current annual testing of the melt shop baghouse stack be reduced for the following reason:
   a. Nucor has tested the facility for each of the criteria pollutants that are listed in 2.1 A.1.4 each year since operations began in 2000. Filterable and condensable PM-10 and PM-2.5, sulfur dioxide, VOC, and lead are well below the permit limits. On a four-year average basis, NOx and CO are also well below the limits. NOx, however, was 75.3% of the limit in 2016 and 89.2% of the limit in 2017, and CO was 88.4% of the limit in 2017.

   b. The DAQ agrees with the above rationale and will reduce testing for PM-2.5, PM-10, SO_2, VOC, and Lead from the melt shop baghouse to once per three years beginning in the 2nd Quarter of 2021. Continued annual testing will be required for NOx and CO. However, if the performance test for at least 2 consecutive years show that emissions are at or below 75% of the emission limit, and if there are no changes in the operation of the Melt Shop baghouse sources that could increase emissions, Nucor may choose to conduct performance tests for NOx and CO every third year.

      If a performance test shows emissions exceeded the emission limit or 75 percent of the emission limit for a pollutant (as listed above), Nucor must conduct annual performance tests for that pollutant until all performance tests over a consecutive 2-year period are at or below 75% of the emissions limit.

3. NOx testing of the reheat furnace on an annual basis per Permit Condition No. 2.2 B.3.c. Nucor requests that the NOx testing be removed from the permit for the reheat furnace for the following reason:
   a. Nucor has tested the reheat furnace for NOx each year since operations began in 2000. The test results for the past four years have been summarized and show 86.72% of maximum to limit.

   b. The DAQ will still require annual testing. If the performance test for at least 2 consecutive years show that emissions are at or below 75% of the emission limit, and if there are no changes in the operation of the Reheat furnace that could increase emissions, Nucor may choose to conduct performance tests for the pollutant every third year.

      If a performance test shows emissions exceeded the emission limit or 75 percent of the emission limit for NOx, Nucor must conduct annual performance tests for NOx until all performance tests over a consecutive 2-year period are at or below 75% of the emissions limit.

XII. Proposed Permit Modifications

The following changes were made to the Nucor Steel – Cofield, Air Permit No. 08680T21

Page No.	Section	Description of Change(s)
Cover letter	N/A	Amended application type; permit revision numbers, and dates. Updated PSD increment tracking statement.
1	Permit cover page	Amended permit revision numbers and all dates.
Throughout	All, Header	Updated permit revision number

Page No.	Section	Description of Change(s)
3, 5, and 6	Table of Emission Sources	Updated description of source (ID No. ES02) to "Ladle Metallurgy Furnace." Included PSD descriptor for source (ID No. ES93A). Changed fuel from No. 2 fuel oil to Natural Gas for source (ID No. ES204)
13	2.1 A.4. b. and c.	Updated PSD BACT fugitive emission limits for sources (ID Nos. ES01, ES02, ES03, ES05 through ES15, and ES94) and Roof Monitors (ID Nos. EP03 and EP04).
14	2.1 A. 4. d. i.	Revised testing requirement for Melt Shop baghouse sources.
16	2.1 A. 5. b. and c. i.	Removed visible emissions as an indicator. Revised CAM language as proposed in the application.
23	2.1 B. 3. b. and c. i.	Updated PSD pounds per hour limits for compliance with NAAQS and PSD increments. Revised testing requirement for reheat furnace (ID No. ES04).
28	2.1 C. 2. b.	Updated PSD pounds per hour limits for compliance with NAAQS and PSD increments.
29 and 30	2.1 E. 2. b. and 3. b.	Updated PSD pounds per hour limits for compliance with NAAQS and PSD increments.
31	2.1 F. 1. b.	Updated PSD pounds per hour limits for compliance with NAAQS and PSD increments.
35	2.1 H. 1. a. and c.	Included source (ID No. ES107).
36	2.1 H. 3. a.	Removed the PSD BACT limit restricting emergency RICE (ID Nos. ES80, ES81, ES82, ES84, and ES86 through ES90) to 100 hours per 12-consecutive month period. Included sources (ES103 through ES 105, ES107, ES116, and ES210).
49	2.1 I. 3. b.	Updated PSD pounds per hour limits for compliance with NAAQS and PSD increments.
50 and 51	2.1 J.	Included PSD BACT condition.
56	2.1 L. 2. b.	Updated PSD pounds per hour limits for compliance with NAAQS and PSD increments.
59	2.1 M. 3. b.	Updated PSD pounds per hour limits for compliance with NAAQS and PSD increments.
61, 63, and 64	2.1 O. 4. and 5.	Included PSD BACT conditions.
67	2.1 P. 3.	Included PSD BACT condition.
72	2.1 Q. 4.	Included PSD BACT condition.
78	2.1 S. 5. 2.1 S. 6., 7., and 8.	Removed requirements under 15A NCAC 02Q .0504. Included PSD BACT condition.
81	2.1 T. 5.	Included PSD BACT condition.
83	2.2 A.1.	Updated limits in condition pertaining to 15A NCAC 02D .1100 "Control of Toxic Air Pollutants (TAP)" based on most recently approved modeling. Also, removed sources that are subject to a MACT standard. Removed TAP testing requirements.
Old page 80	2.2 D.1.	Removed PSD Avoidance Condition.
87	3 - General Conditions	Updated General Conditions to most recent shell version (version 5.3, 08/21/2018).

XIII. Public Notice Requirements

40 CFR 51.166(q) requires that the permitting agency make available to the public a preliminary determination on the proposed project, including all materials considered in making this determination. With respect to this preliminary determination the NCDAQ:

A. Will make available on its website, a copy of the preliminary determination and all information submitted and considered. In addition, a copy of this same information will be made available at the NCDAQ Washington Regional Office and the NCDAQ Central Office in Raleigh, NC.
B. Will publish a public notice, by advertisement in the XXXX of the preliminary decision and an opportunity for public comment.
C. Will send a copy of the public notice to the applicant, EPA Region IV for comment, and officials having cognizance over the location of the setting of the project as follows:
    1. Any affected state/local air agency – No other state or local agencies are expected to be affected by this project.
    2. Chief Executive of the county in which the proposed project is to be located. A notice will be sent to the Hertford County Manager, Ms. Loria D. Williams.
    3. Federal Land Manager (Ms. Andrea Stacy, National Park Service)

XIV. Conclusion

The public notice and EPA review period expired on XXXXX. XXXX comments were received during the review period.

Based on the application submitted and the review of this proposal by the NCDAQ, the NCDAQ will make a final determination on whether or not the project can be approved and a permit issued.

ATTACHMENT I – EMISSIONS CALCULATIONS

Source: Electric Arc Furnace (ES01) **Cofield, NC**

Emissions via Baghouse

Maxmium Throughput	350	ton/hour
	2,190,000	tpy
Baghouse flow rate	1,160,000	dscfm
ES05-ES15, ES94, ES106	8760	hr/yr
Pounds per Ton	2000	lb/ton

Pollutant	Emission Factors[1,2] lb/ton	gr/dscf	Total Potential Emissions (lb/hr)	(tpy)
NOx	0.36		126.00	394.2
PM_{10}		0.0052	51.70	226.5
SO_2	0.35		122.50	383.3
CO	2.6		910.00	2,847.0
VOC[3]	0.13		45.50	142.4
Lead	0.0016	-	0.56	1.8

[1] From 2009 PSD application except for CO

[2] From 2010 PSD application (CO only)

[3] Note: 128.16 tons emitted through the baghouse; 14.24 emitted as fugitives [see below]

Fugitive VOC Emissions via Roof Monitors

Melt Shop Capture	90.0%
Rolled Steel (tons)	1,365,589
Design Capacity (tons)	2,190,000
Percent Production	62%

Permitted Melt Shop Baghouse Emissions	142.4	VOC (tpy)
Melt Shop Fugitive Emissions[1,2]	14.24	VOC (tpy)

Furnace/Caster Used Oil & Grease	78.8	tons

Fugitive HAP Emissions via Roof Monitors

Compound Name	Weight % in O&G[3]	Furnace/Caster[3] lb/hr	lb/day	lb/yr	tpy
Total HAPs	**0.873%**	7.85E-05	1.88E-03	1.38E+03	**0.688**

Chloromethane	0.08%	1.03E-06	2.48E-05	1.81E+01	0.009
Acrolein	0.46%	5.95E-06	1.43E-04	1.04E+02	0.052
Carbon Disulfide	0.57%	7.37E-06	1.77E-04	1.29E+02	0.065
Acetonitrile	0.07%	9.05E-07	2.17E-05	1.59E+01	0.008
Methylene Chloride	0.89%	1.15E-05	2.76E-04	2.02E+02	0.101
Hexane	1.34%	1.73E-05	4.16E-04	3.04E+02	0.152
Benzene	0.07%	9.05E-07	2.17E-05	1.59E+01	0.008
Methyl Isobutyl Ketone	0.04%	5.17E-07	1.24E-05	9.06E+00	0.005
Toluene	0.22%	2.85E-06	6.83E-05	4.98E+01	0.025
Ethylbenzene	0.04%	5.17E-07	1.24E-05	9.06E+00	0.005
m-/ p-Xylenes	0.11%	1.42E-06	3.41E-05	2.49E+01	0.012
o-Xylenes	0.05%	6.47E-07	1.55E-05	1.13E+01	0.006
Styrene	0.03%	3.88E-07	9.31E-06	6.80E+00	0.003
Acetaldehyde	1.11%	1.44E-05	3.45E-04	2.52E+02	0.126
Methanol	0.63%	8.15E-06	1.96E-04	1.43E+02	0.071
1,3 - Butadiene	0.02%	2.59E-07	6.21E-06	4.53E+00	0.002
Chloroethane	0.03%	3.88E-07	9.31E-06	6.80E+00	0.003
Chloroform	0.06%	7.76E-07	1.86E-05	1.36E+01	0.007
Trichloroethene	0.04%	5.17E-07	1.24E-05	9.06E+00	0.005
Carbon Tetrachloride	0.05%	6.47E-07	1.55E-05	1.13E+01	0.006
1,4 - Dioxane	0.02%	2.59E-07	6.21E-06	4.53E+00	0.002
Bromoform	0.09%	1.16E-06	2.79E-05	2.04E+01	0.010
Naphthalene	0.04%	5.17E-07	1.24E-05	9.06E+00	0.005

[1]Melt shop emissions are based on the assumption that 10% of permitted emissions are released as fugitives and not from the stack (VOC/HAP Summary provided by Corporate). These emissions are emitted from the roof top monitor.

[2]VOC emissions from the furnace/caster due to oil and grease volitzation are included in the estimated melt shop fugitive emissions.

[3]HAP concentrations from VOC/HAP Summary provided by Corporate - weight % in Oil and Grease of individual HAPs is volatilized at 12.5% and a safety factor of 15% is applied. Total HAP weight % already includes these assumptions.

PM Emissions Only

Sources: ES02 Ladle Metallurgy Furnace
ES03 Caster

Assumptions:

Throughput	350 tph	(Original throughput in PSD application was 250 tph)
Hours of Operation	8760 hr/yr	
Baghouse Control Efficiency	99.85%	

Emissions Calculations:

			Potential Uncontrolled PM Emissions		Potential Controlled PM Emissions	
	TSP/PM10 Emission factor[1], lb/ton	% Captured[2]	lb/hr	tpy	lb/hr	tpy
ES02	0.61	99%	213.5	935.13	0.32	1.39
ES03	0.07	98%	24.5	107.31	0.04	0.16

[1]From original PSD application (1998)

[2]Uncaptured emissions vented through roof monitor

Source:	Non-vented NG combustion sources through roof monitor	Cofield, NC
ES05-ES15, ES94, 106	Non-vented natural gas combustion sources	

Emissions Source	Source ID	Maximum Heat Input	Units
Ladle preheater w/low NOx burners	ES05	15.00	MMBtu/hr
Ladle preheater w/low NOx burners	ES06	15.00	MMBtu/hr
Ladle preheater w/low NOx burners	ES07	15.00	MMBtu/hr
Ladle preheater w/low NOx burners	ES08	15.00	MMBtu/hr
Ladle preheater w/low NOx burners	ES09	15.00	MMBtu/hr
Ladle dryer w/low NOx burners	ES10	15.00	MMBtu/hr
Tundish preheater w/low NOx burners	ES11	10.00	MMBtu/hr
Tundish preheater w/low NOx burners	ES12	10.00	MMBtu/hr
Tundish Dryer w/low NOx burners	ES13	15.00	MMBtu/hr
Tundish Dryer w/low NOx burners	ES14	15.00	MMBtu/hr
Tundish nozzle preheater w/low NOx burners	ES15	15.00	MMBtu/hr
Ladle preheater w/low NOx burners	ES94	9.00	MMBtu/hr
Ladle preheater w/low NOx burners	ES106	10.00	MMBtu/hr
	TOTAL	174.00	MMBtu/hr
Heating value for NG		1,026	Btu/ft3
Hours of Operation		8,760	hr/yr

			Potential Emissions		
Pollutant	**Uncontrolled Emission Factor for Natural Gas ($lb/mmft^3$)**	**Ref**	**Emissions from NG (lb/hr)**	**Emissions from NG (lb/yr)**	**Emissions from NG (ton/yr)**
PM	7.6	1	1.29E+00	11,291	5.65
PM-10	7.6	1	1.29E+00	11,291	5.65
PM-2.5	7.6	1	1.29E+00	11,291	5.65
SO_2	0.6000	1	1.02E-01	891	0.45
NOx	50	1	8.48E+00	74,281	37.14
VOCs	5.500	1	9.33E-01	8,171	4.09
CO	84	1	1.42E+01	124,792	62.40
2-Methylnaphthalene	2.40E-05	1	4.07E-06	3.57E-02	1.78E-05
3-Methylchloranthrene	1.80E-06	1	3.05E-07	2.67E-03	1.34E-06
7,12-Dimethylbenz(a)anathracene	1.60E-05	1	2.71E-06	2.38E-02	1.19E-05
Acenaphthene	1.80E-06	1	3.05E-07	2.67E-03	1.34E-06
Acenaphtylene	1.80E-06	1	3.05E-07	2.67E-03	1.34E-06
Acetaldehyde	1.52E-05	3	2.58E-06	2.26E-02	1.13E-05
Acrolein	1.80E-05	3	3.05E-06	2.67E-02	1.34E-05
Ammonia	3.20E+00	3	5.43E-01	4.75E+03	2.38E+00
Anthracene	2.40E-06	1	4.07E-07	3.57E-03	1.78E-06
Benz(a)anthracene	1.80E-06	1	3.05E-07	2.67E-03	1.34E-06
Benzene	2.10E-03	1	3.56E-04	3.12E+00	1.56E-03
Benzo(a)pyrene	1.20E-06	1	2.04E-07	1.78E-03	8.91E-07
Benzo(b)fluoranthene	1.80E-06	1	3.05E-07	2.67E-03	1.34E-06
Benzo(g,h,I)perylene	1.20E-06	1	2.04E-07	1.78E-03	8.91E-07
Benzo(k)fluoranthene	1.80E-06	1	3.05E-07	2.67E-03	1.34E-06
Butane	2.1	1	3.56E-01	3.12E+03	1.56E+00
Chrysene	1.80E-06	1	3.05E-07	2.67E-03	1.34E-06
Dibenz(a,h)anthracene	1.20E-06	1	2.04E-07	1.78E-03	8.91E-07
Dichlorobenzene	1.20E-03	1	2.04E-04	1.78E+00	8.91E-04
Ethane	3.1	1	5.26E-01	4.61E+03	2.30E+00
Fluoranthene	3.00E-06	1	5.09E-07	4.46E-03	2.23E-06
Fluorene	2.80E-06	1	4.75E-07	4.16E-03	2.08E-06
Formaldehyde	7.50E-02	1	1.27E-02	1.11E+02	5.57E-02
Hexane	1.8	1	3.05E-01	2.67E+03	1.34E+00
Indeno(1,2,3-cd)pyrene	1.80E-06	1	3.05E-07	2.67E-03	1.34E-06
Naphthalene	6.10E-04	1	1.03E-04	9.06E-01	4.53E-04
Pentane	2.6	1	4.41E-01	3.86E+03	1.93E+00
Phenanathrene	1.70E-05	1	2.88E-06	2.53E-02	1.26E-05
Propane	1.6	1	2.71E-01	2.38E+03	1.19E+00
Pyrene	5.00E-06	1	8.48E-07	7.43E-03	3.71E-06
Toluene	3.40E-03	1	5.77E-04	5.05E+00	2.53E-03
Arsenic	2.00E-04	1	3.39E-05	2.97E-01	1.49E-04
Barium	4.40E-03	1	7.46E-04	6.54E+00	3.27E-03
Beryllium	1.20E-05	1	2.04E-06	1.78E-02	8.91E-06
Cadmium	1.10E-03	1	1.87E-04	1.63E+00	8.17E-04
Chromium	7.28E-04	1,4	1.23E-04	1.08E+00	5.41E-04
Cobalt	8.40E-05	1	1.42E-05	1.25E-01	6.24E-05
Copper	8.50E-04	1	1.44E-04	1.26E+00	6.31E-04
Lead	5.00E-04	1	8.48E-05	7.43E-01	3.71E-04
Manganese	3.80E-04	1	6.44E-05	5.65E-01	2.82E-04
Mercury	2.60E-04	1	4.41E-05	3.86E-01	1.93E-04
Molybdenum	1.10E-03	1	1.87E-04	1.63E+00	8.17E-04
Nickel	2.10E-03	1	3.56E-04	3.12E+00	1.56E-03
Selenium	2.40E-05	1	4.07E-06	3.57E-02	1.78E-05
Vanadium	2.30E-03	1	3.90E-04	3.42E+00	1.71E-03
Zinc	2.90E-02	1	4.92E-03	4.31E+01	2.15E-02

1- AP -42; Compilation of Air Pollutant Emission Factors Vol. 1 - Stationary Sources USEPA, 5th ed. Section 1.4,3/98- Small Boilers , uncontrol
2- AP -42; Compilation of Air Pollutant Emission Factors Vol. 1 - Stationary Sources USEPA, 5th ed. Section 1.3
3 - NC DAQ Natural Gas combustion spreadsheet (revision 20150622).

4- Per NC DENR guidance dated July 7, 1999, chromium emissions from combustion should be evaluated as chromic acid under "soluble chromate compounds". A factor of 0.52 is used to convert the chromium emissions to chromic acid.

			Potential Emissions		
GHG Pollutant	**Uncontrolled Emission Factor for Natural Gas (kg/MMBtu)**	**Ref**	**Emissions from NG (lb/hr)**	**Emissions from NG (lb/yr)**	**Emissions from NG (ton/yr)**
CO_2	5.31E+01	5	2.04E+04	1.78E+08	8.92E+04
Methane	1.00E-03	5	3.84E-01	3.36E+03	1.68E+00
N_2O	1.00E-04	5	3.84E-02	3.36E+02	1.68E-01
CO_2e			2.04E+04	1.79E+08	8.93E+04

5- GHG factors from Tables C-1 through C-2 of EPA's GHG Reporting Rule.
CO_2e = CO_2 Emissions + CH_4 Emissions * GWP of CH_4 + N_2O Emissions * GWP of N_2O

GWP for CH_4	25	(Table A-1 of 40 CFR Part 98)
GWP for N_2O	298	(Table A-1 of 40 CFR Part 98)

Sources: ES01 Electric Arc
ES02 Furnace Ladle Metallurgy Furnace PM Only
ES03 Continuous Slab Caster PM Only
ES05-ES15, ES94, ES106, ES202 Non-vented natural gas combustion sources

ions:
ercentages through roof monitor

	PM[1]	VOC	SO2	NO 2	CO	Lead
ES01[2]	0.5%	10%	1.0%	1.0%	1.0%	0.5%
ES02	1.0%					
ES03	2.0%					
ES05-ES15, ES94, ES106, ES202	100.0 %	100.0 %	100.0 %	100.0%	100.0 %	100.0 %

[1]Original PSD application, except for combustion sources

[2]EAF percentages through roof monitor - VOC from corporate guidance (2015), other percentages from original PSD application

Calculations:

	ES0 1[1]		**ES0 2[1]**		**ES0 3[1]**		**Non-vented NG combustion**		**TOTAL (BACT Limit)**	
	lb/hr	**tpy**	**lb/hr**	**tpy**	**lb/hr**	**tpy**	**lb/hr**	**tpy**	**lb/hr**	**tpy**
PM10	0.26	1.13	2.14	9.35	0.49	2.15	1.64	7.20	4.53	19.8
PM2.5	0.26	1.13	2.14	9.35	0.49	2.15	1.64	7.20	4.53	19.8
SO2	1.23	3.83					0.13	0.57	1.35	4.4
NO2	1.26	3.94					10.82	47.37	12.08	51.3
CO	9.10	28.47					18.17	79.59	27.27	108.1
VOC	4.55	14.24					1.19	5.21	5.74	19.4
Lead	0.002 8	0.0087 6					1.08E-04	4.74E-04	0.003	0.009

[1]Assume PM10=PM2.5

Emissions Source	Source ID	Maximum Heat Input	Units
Tundish Preheater (NG)	ES11	10.00	MMBtu/hr
Tundish Preheater (NG)	ES12	10.00	MMBtu/hr
Heating value for NG		1,026	Btu/ft3
Hours of Operation		8,760	hr/yr

			Potential Emissions				
Pollutant	**Uncontrolled Emission Factor for Natural Gas ($lb/mmft^3$)**	**Ref**	**ES11, lb/hr**	**ES12, lb/hr**	**Emissions from NG (lb/hr)**	**Emissions from NG (lb/yr)**	**Emissions from NG (ton/yr)**
PM	7.6	1	0.07	0.07	1.48E-01	1,298	0.65
PM-10	7.6	1	0.07	0.07	1.48E-01	1,298	0.65
SO_2	0.6000	1	0.01	0.01	1.17E-02	102	0.05
NOx	50	1	0.49	0.49	9.75E-01	8,538	4.27
VOCs	5.500	1	0.05	0.05	1.07E-01	939	0.47
CO	84	1	0.82	0.82	1.64E+00	14,344	7.17
1,1,1-Trichloroethane			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
2-Methylnaphthalene	2.40E-05	1	2.34E-07	2.34E-07	4.68E-07	4.10E-03	2.05E-06
3-Methylchloranthrene	1.80E-06	1	1.75E-08	1.75E-08	3.51E-08	3.07E-04	1.54E-07
7,12-Dimethylbenz(a)anathracene	1.60E-05	1	1.56E-07	1.56E-07	3.12E-07	2.73E-03	1.37E-06
Acenaphthene	1.80E-06	1	1.75E-08	1.75E-08	3.51E-08	3.07E-04	1.54E-07
Acenaphtylene	1.80E-06	1	1.75E-08	1.75E-08	3.51E-08	3.07E-04	1.54E-07
Acetaldehyde	1.52E-05	3	1.48E-07	1.48E-07	2.96E-07	2.60E-03	1.30E-06
Acrolein	1.80E-05	3	1.75E-07	1.75E-07	3.51E-07	3.07E-03	1.54E-06
Ammonia	3.20E+00	3	3.12E-02	3.12E-02	6.24E-02	5.46E+02	2.73E-01
Anthracene	2.40E-06	1	2.34E-08	2.34E-08	4.68E-08	4.10E-04	2.05E-07
Benz(a)anthracene	1.80E-06	1	1.75E-08	1.75E-08	3.51E-08	3.07E-04	1.54E-07
Benzene	2.10E-03	1	2.05E-05	2.05E-05	4.09E-05	3.59E-01	1.79E-04
Benzo(a)pyrene	1.20E-06	1	1.17E-08	1.17E-08	2.34E-08	2.05E-04	1.02E-07
Benzo(b)fluoranthene	1.80E-06	1	1.75E-08	1.75E-08	3.51E-08	3.07E-04	1.54E-07
Benzo(g,h,I)perylene	1.20E-06	1	1.17E-08	1.17E-08	2.34E-08	2.05E-04	1.02E-07
Benzo(k)fluoranthene	1.80E-06	1	1.75E-08	1.75E-08	3.51E-08	3.07E-04	1.54E-07
Butane	2.1	1	2.05E-02	2.05E-02	4.09E-02	3.59E+02	1.79E-01
Chrysene	1.80E-06	1	1.75E-08	1.75E-08	3.51E-08	3.07E-04	1.54E-07
Dibenz(a,h)anthracene	1.20E-06	1	1.17E-08	1.17E-08	2.34E-08	2.05E-04	1.02E-07
Dichlorobenzene	1.20E-03	1	1.17E-05	1.17E-05	2.34E-05	2.05E-01	1.02E-04
Ethane	3.1	1	3.02E-02	3.02E-02	6.04E-02	5.29E+02	2.65E-01
Ethylbenzene			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Fluoranthene	3.00E-06	1	2.92E-08	2.92E-08	5.85E-08	5.12E-04	2.56E-07
Fluorene	2.80E-06	1	2.73E-08	2.73E-08	5.46E-08	4.78E-04	2.39E-07
Formaldehyde	7.50E-02	1	7.31E-04	7.31E-04	1.46E-03	1.28E+01	6.40E-03
Hexane	1.8	1	1.75E-02	1.75E-02	3.51E-02	3.07E+02	1.54E-01
Indeno(1,2,3-cd)pyrene	1.80E-06	1	1.75E-08	1.75E-08	3.51E-08	3.07E-04	1.54E-07
Naphthalene	6.10E-04	1	5.95E-06	5.95E-06	1.19E-05	1.04E-01	5.21E-05
Pentane	2.6	1	2.53E-02	2.53E-02	5.07E-02	4.44E+02	2.22E-01
Phenanathrene	1.70E-05	1	1.66E-07	1.66E-07	3.31E-07	2.90E-03	1.45E-06
Propane	1.6	1	1.56E-02	1.56E-02	3.12E-02	2.73E+02	1.37E-01
Pyrene	5.00E-06	1	4.87E-08	4.87E-08	9.75E-08	8.54E-04	4.27E-07
Toluene	3.40E-03	1	3.31E-05	3.31E-05	6.63E-05	5.81E-01	2.90E-04
Arsenic	2.00E-04	1	1.95E-06	1.95E-06	3.90E-06	3.42E-02	1.71E-05
Barium	4.40E-03	1	4.29E-05	4.29E-05	8.58E-05	7.51E-01	3.76E-04
Beryllium	1.20E-05	1	1.17E-07	1.17E-07	2.34E-07	2.05E-03	1.02E-06
Cadmium	1.10E-03	1	1.07E-05	1.07E-05	2.14E-05	1.88E-01	9.39E-05
Chromium	7.28E-04	1,4	7.10E-06	7.10E-06	1.42E-05	1.24E-01	6.22E-05
Cobalt	8.40E-05	1	8.19E-07	8.19E-07	1.64E-06	1.43E-02	7.17E-06
Copper	8.50E-04	1	8.28E-06	8.28E-06	1.66E-05	1.45E-01	7.26E-05
Lead	5.00E-04	1	4.87E-06	4.87E-06	9.75E-06	8.54E-02	4.27E-05
Manganese	3.80E-04	1	3.70E-06	3.70E-06	7.41E-06	6.49E-02	3.24E-05
Mercury	2.60E-04	1	2.53E-06	2.53E-06	5.07E-06	4.44E-02	2.22E-05
Molybdenum	1.10E-03	1	1.07E-05	1.07E-05	2.14E-05	1.88E-01	9.39E-05
Nickel	2.10E-03	1	2.05E-05	2.05E-05	4.09E-05	3.59E-01	1.79E-04
Selenium	2.40E-05	1	2.34E-07	2.34E-07	4.68E-07	4.10E-03	2.05E-06
Vanadium	2.30E-03	1	2.24E-05	2.24E-05	4.48E-05	3.93E-01	1.96E-04
Zinc	2.90E-02	1	2.83E-04	2.83E-04	5.65E-04	4.95E+00	2.48E-03

1- AP -42; Compilation of Air Pollutant Emission Factors Vol. 1 - Stationary Sources USEPA, 5th ed. Section 1.4,3/98- Small Boilers ,
uncontrolled 2- AP -42; Compilation of Air Pollutant Emission Factors Vol. 1 - Stationary Sources USEPA, 5th ed. Section 1.3
3 - NC DAQ Natural Gas combustion spreadsheet (revision 20150622).
4- Per NC DENR guidance dated July 7, 1999, chromium emissions from combustion should be evaluated as chromic acid under "soluble chromate compounds". A

			Potential Emissions				
GHG Pollutant	**Uncontrolled Emission Factor for Natural Gas (kg/MMBtu)**	**Ref**	**ES11, lb/hr**	**ES12, lb/hr**	**Emissions from NG (lb/hr)**	**Emissions from NG (lb/yr)**	**Emissions from NG (ton/yr)**
CO_2	5.31E+01	5	1.17E+03	1.17E+03	2.34E+03	2.05E+07	1.02E+04
Methane	1.00E-03	5	2.21E-02	2.21E-02	4.41E-02	3.86E+02	1.93E-01
N_2O	1.00E-04	5	2.21E-03	2.21E-03	4.41E-03	3.86E+01	1.93E-02
CO_2e			1.17E+03	1.17E+03	2.34E+03	2.05E+07	1.03E+04

5- GHG factors from Tables C-1 through C-2 of EPA's GHG Reporting Rule.

$CO_2e = CO_2$ Emissions + CH_4 Emissions * GWP of CH_4 + N_2O Emissions * GWP of N_2O

GWP for CH_4	25	(Table A-1 of 40 CFR Part 98)	GWP for N_2O	298	(Table A-1 of 40 CFR Part 98)

EMISSIONS CALCULATIONS — **Nucor Steel**

Source: Plasma Shear - Normal (ES100) - Remove PSD avoidance operating limit — **Cofield, NC**

Flow Rate	320	ft^3/hr
Heat Input	0.32	MMBtu/hr
Flowrate through baghouse	3200	dscfm
Potential Operation	8760	hr/yr
Coversion Pounds to Tons	2000	lb/ton

Pollutant	Emission Factor (lbs/ft^3)	Inlet Concentration (grains/dscf)	Control Efficiency Factor (1-0.9999)	Total Potential Emissions (lb/hr)	(tpy)
NOx	1.00E-04	-	-	0.03	0.14
Total $PM_{10}/PM_{2.5}$	-	0.2	0.0001	0.0005	0.0024
SO_2	6.00E-07	-	-	0.0002	0.0008
CO	8.40E-05	-	-	0.0269	0.1177
VOC	1.50E-06	-	-	0.0018	0.0077
Lead	5.00E-10	-	-	1.60E-07	7.01E-07
GHGs	(lbs/MMBtu)	-	-		
CH_4	2.20E-03	-	-	0.0007	0.0031
N_2O	2.20E-04	-	-	0.0001	0.0003
CO_2	1.17E+02	-	-	37.37	163.60
CO_{2e}	1.17E+02	-	-	37.41	163.85

Summary of TAP pollutant emission rates

Flow Rate	320	ft^3/hr
Heat Input	0.32	MMBtu/hr
Potential Operation	8760	hr/yr
Conversion Pounds t	2000	lb/ton

CAS NO.	Pollutant*	Emission Factor ($lb/10^6$ scf)	Emission Rate (lb/hr)	Emission Rate (tpy)
91-57-6	2-Methylnaphthalene	2.40E-05	7.68E-09	3.36E-08
56-49-5	3-Methylchloroanthrene	1.80E-05	5.76E-09	2.52E-08
57-97-6	7,12-Dimethylbenz(a)anthracene	1.60E-05	5.12E-09	2.24E-08
75-07-0	Acetaldehyde	1.52E-05	4.86E-09	2.13E-08
107-02-8	Acrolein	1.80E-05	5.76E-09	2.52E-08
83-32-9	Acenaphthene	1.80E-06	5.76E-10	2.52E-09
208-96-8	Acenaphthylene	1.80E-06	5.76E-10	2.52E-09
7664-41-7	Ammonia	3.20E+00	1.02E-03	4.49E-03
120-12-7	Anthracene	2.40E-06	7.68E-10	3.36E-09
56-55-3	Benz(a)anthracene	1.80E-06	5.76E-10	2.52E-09
71-43-2	Benzene	2.10E-03	6.72E-07	2.94E-06
50-32-8	Benzo(a)pyrene	1.20E-06	3.84E-10	1.68E-09
205-99-2	Benzo(b)fluoranthene	1.80E-06	5.76E-10	2.52E-09
191-24-2	Benzo(g,h,i)perylene	1.20E-06	3.84E-10	1.68E-09
205-82-3	Benzo(k)fluoranthene	1.80E-06	5.76E-10	2.52E-09
218-01-9	Chrysene	1.80E-06	5.76E-10	2.52E-09
53-70-3	Dibenzo(a,h)anthracene	1.20E-06	3.84E-10	1.68E-09
25321-22-6	Dichlorobenzene	1.20E-03	3.84E-07	1.68E-06
206-44-0	Fluoranthene	3.00E-06	9.60E-10	4.20E-09
86-73-7	Fluorene	2.80E-06	8.96E-10	3.92E-09
50-00-0	Formaldehyde	7.50E-02	2.40E-05	1.05E-04
110-54-3	Hexane	1.80E+00	5.76E-04	2.52E-03
193-39-5	Indeno(1,2,3-cd)pyrene	1.80E-06	5.76E-10	2.52E-09
91-20-3	Naphthalene	6.10E-04	1.95E-07	8.55E-07
85-01-8	Phenanathrene	1.70E-05	5.44E-09	2.38E-08
129-00-0	Pyrene	5.00E-06	1.60E-09	7.01E-09
108-88-3	Toluene	3.40E-03	1.09E-06	4.77E-06
7440-38-2	Arsenic	2.00E-04	6.40E-08	2.80E-07
7440-29-3	Barium	4.40E-03	1.41E-06	6.17E-06
7440-41-7	Beryllium	1.20E-05	3.84E-09	1.68E-08
7440-43-9	Cadmium	1.10E-03	3.52E-07	1.54E-06
7440-47-3	Chromium	7.20E-04	2.30E-07	1.02E-06
7440-48-4	Cobalt	8.40E-05	2.69E-08	1.18E-07
7440-50-8	Copper	8.50E-04	2.72E-07	1.19E-06
7439-96-5	Manganese	3.80E-04	1.22E-07	5.33E-07
7439-97-6	Mercury	2.60E-04	8.32E-08	3.64E-07
7439-98-7	Molybdenum	1.10E-03	3.52E-07	1.54E-06
7440-02-0	Nickel	2.10E-03	6.72E-07	2.94E-06
7782-49-2	Selenium	2.40E-05	7.68E-09	3.36E-08
7440-62-2	Vanadium	2.30E-03	7.36E-07	3.22E-06
7440-66-6	Zinc	2.90E-02	9.28E-06	4.06E-05

*Acetaldehyde, acrolein, and ammonia from NC DEQ Spreadsheets for NG Combustion. All other factors from AP-42 Section 1.4. Per NC DENR guidance dated july 7, 1999, chromium emissions from combustion should be evaluated as chromic acid under "soluble chromate compounds". A factor of 0.52 is used to convert the chromium emissions to chromic acid.

EMISSIONS CALCULATIONS — **Nucor Steel**

Source: **Plasma Torch - Normal (ES109) - Remove PSD avoidance operating limit** — **Cofield, NC**

Flow Rate	320	ft^3/hr
Heat Input	0.32	MMBtu/hr
Flowrate through baghouse	3200	dscfm
Potential Operation	8760	hr/yr
Conversion Pounds to Tons	2000	lb/ton

Pollutant	Emission Factor (lbs/ft^3)	Inlet Concentration (grains/dscf)	Control Efficiency Factor (1-0.9999)	Total Potential Emissions (lb/hr)	(tpy)
NOx	1.00E-04	-	-	0.03	0.14
Total $PM_{10}/PM_{2.5}$	-	0.2	0.0001	0.0005	0.0024
SO_2	6.00E-07	-	-	0.0002	0.0008
CO	8.40E-05	-	-	0.0269	0.1177
VOC	5.50E-06	-	-	0.0018	0.0077
Lead	5.00E-10	-	-	1.60E-07	7.01E-07
GWGs	(lbs/MMBtu)	-	-		
CH_4	2.20E-03	-	-	0.0007	0.0031
N_2O	2.20E-04	-	-	0.0001	0.0003
CO_2	1.17E+02	-	-	37.37	163.68
CO_{2e}	1.17E+02	-	-	37.41	163.85

Summary of TAP pollutant emission rates

Flow Rate	320	ft^3/hr
Heat Input	0.32	MMBtu/hr
Potential Operation	8760	hr/yr
Conversion: Pounds to Tons	2000	lb/ton

CAS NO.	Pollutant*	Emission Factor ($lb/10^6$ scf)	Emission Rate (lb/hr)	Emission Rate (tpy)
91-57-6	2-Methylnaphthalene	2.40E-05	7.68E-09	3.36E-08
56-49-5	3-Methylchloranthrene	1.80E-05	5.76E-09	2.52E-08
57-97-6	Dimethylbenz(a)anthracene	1.60E-05	5.12E-09	2.24E-08
75-07-0	Acetaldehyde	1.52E-05	4.86E-09	2.13E-08
107-02-8	Acrolein	1.80E-05	5.76E-09	2.52E-08
83-32-9	Acenaphthene	1.80E-06	5.76E-10	2.52E-09
208-96-8	Acenaphthylene	1.80E-06	5.76E-10	2.52E-09
7664-41-7	Ammonia	3.20E+00	1.02E-03	4.49E-03
120-12-7	Anthracene	2.40E-06	7.68E-10	3.36E-09
56-55-3	Benz(a)anthracene	1.80E-06	5.76E-10	2.52E-09
71-43-2	Benzene	2.10E-03	6.72E-07	2.94E-06
50-32-8	Benzo(a)pyrene	1.20E-06	3.84E-10	1.68E-09
205-99-2	Benzo(b)fluoranthene	1.80E-06	5.76E-10	2.52E-09
191-24-2	Benzo(g,h,i)perylene	1.20E-06	3.84E-10	1.68E-09
205-82-3	Benzo(k)fluoranthene	1.80E-06	5.76E-10	2.52E-09
218-01-9	Chrysene	1.80E-06	5.76E-10	2.52E-09
53-70-3	Dibenzo(a,h)anthracene	1.20E-06	3.84E-10	1.68E-09
25321-22-6	Dichlorobenzene	1.20E-03	3.84E-07	1.68E-06
206-44-0	Fluoranthene	3.00E-06	9.60E-10	4.20E-09
86-73-7	Fluorene	2.80E-06	8.96E-10	3.92E-09
50-00-0	Formaldehyde	7.50E-02	2.40E-05	1.05E-04
110-54-3	Hexane	1.80E+00	5.76E-04	2.52E-03
193-39-5	Indeno(1,2,3-cd)pyrene	1.80E-06	5.76E-10	2.52E-09
91-20-3	Naphthalene	6.10E-04	1.95E-07	8.55E-07
85-01-8	Phenanthrene	1.70E-05	5.44E-09	2.38E-08
129-00-0	Pyrene	5.00E-06	1.60E-09	7.01E-09
108-88-3	Toluene	3.40E-03	1.09E-06	4.77E-06
7440-38-2	Arsenic	2.00E-04	6.40E-08	2.80E-07
7440-29-3	Barium	4.40E-03	1.41E-06	6.17E-06
7440-41-7	Beryllium	1.20E-05	3.84E-09	1.68E-08
7440-43-9	Cadmium	1.10E-03	3.52E-07	1.54E-06
7440-47-3	Chromium	7.20E-04	2.30E-07	1.02E-06
7440-48-4	Cobalt	8.40E-05	2.69E-08	1.18E-07
7440-50-8	Copper	8.50E-04	2.72E-07	1.19E-06
7439-96-5	Manganese	3.80E-04	1.22E-07	5.33E-07
7439-97-6	Mercury	2.60E-04	8.32E-08	3.64E-07
7439-98-7	Molybdenum	1.10E-03	3.52E-07	1.54E-06
7440-02-0	Nickel	2.10E-03	6.72E-07	2.94E-06
7782-49-2	Selenium	2.40E-05	7.68E-09	3.36E-08
7440-62-2	Vanadium	2.30E-03	7.36E-07	3.22E-06
7440-66-6	Zinc	2.90E-02	9.28E-06	4.06E-05

*Acetaldehyde, acrolein, and ammonia from NC DEQ Spreadsheets for NG Combustion. All other factors from AP-42 Section 1.4. Per NC DENR guidance dated July 7, 1999, chromium emissions from combustion should be evaluated as chromic acid under "soluble chromate compounds". A factor of 0.52 is used to convert the chromium emissions to chromic acid.

Emissions Source	Source ID	Maximum Heat Input	Units
Oxygen Vaporizer (NG)	ID201	12.25	MMBtu/hr
Car Bottom Furnace (NG)	ID202	50.00	MMBtu/hr
Temporary Boiler (NG)	ID204	250.00 11.16	hp MMBtu/hr (assuming 75% efficiency)
Tempering Furnace (NG)	ID205	87.00	MMBtu/hr
Lime Injection System (NG)	ID203	12.96	MMBtu/hr
Plasma Shear (NG)	ID235	0.92	MMBtu/hr
Burning Bed (NG)	ID236	0.92	MMBtu/hr
Heating value for NG		1,026	Btu/ft3
Heating value for No. 2 Fuel oil		140	MMBtu/1000 gal
Sulfur content of fuel		0.0015	%
Maximum Annual No.2 Oil Usage		600	1000 gal/year
Hours of Operation - Car Bottom Furnace		8,400	hr/yr
Hours of Operation - Temp Boiler, Oxygen Vaporizer, Temp Boiler, Lime Injection System, Burning Bed, Plasma Shear		8,760	hr/yr
Efficiency of CI300 - Confirmit Lime Injection System, CI235 - Controls Plasma Shear, and CI216 - Controls Burning Bed		99%	

				Potential Emissions, tpy						Natural Gas Combustion			Total Potential Emissions		
Pollutant	Uncontrolled Emission Factor for Natural Gas (lb/mmcf)		Ref.	Oxygen Vaporizer	Car Bottom Furnace	Temporary Boiler	Tempering Furnace	Lime Injection System [4]	Burning Bed [4]	Plasma Shear [4]	Emissions from NG (lb/hr)	Emissions from NG (tpy/yr)	Emissions from NG (tpy/yr)	(lb/hr)	(lb/day)	(tpy/yr)
PM	7.6		1	0.82	3.56	0.36	3.83	4.61E-03	1.04E-04	1.04E-04	5.84E-03	0.026	0.03	5.84E-03	14	3.32
PM-10	7.6		1	0.82	3.56	0.36	3.83	4.61E-03	1.04E-04	1.04E-04	5.84E-03	0.026	0.03	5.84E-03	14	3.32
SO_2	0.6000		1	0.03	0.12	0.03	0.13	9.17E-02	8.20E-04	8.20E-04	5.05E-02	0.22	0.22	5.05E-02	1	0.22
NOx	100	50	1	5.21	10.24	4.76	11.08	2.64	0.07	0.07	5.95E+00	26.069	32.00	5.95E+00	128	32.00
VOCs	5.500		1	0.29	1.15	0.26	0.89	0.29	0.01	0.01	4.65E-01	1.999	1.98	4.65E-01	11	1.98
CO	84		1	4.46	17.19	4.00	13.62	4.44	0.11	0.11	7.07E+00	30.969	30.23	7.07E+00	170	30.23
2-Methylnaphthalene	2.40E-05		3	1.25E-06	4.91E-06	1.14E-06	4.79E-06	1.27E-06	8.20E-08	3.28E-08	2.02E-06	1.75E-02	8.84E-06	2.02E-06	4.85E-05	8.84E-06
3-Methylchloranthrene	1.80E-06		3	9.38E-08	3.68E-07	8.57E-08	2.84E-07	9.50E-08	2.46E-09	2.46E-09	1.52E-07	1.31E-03	6.63E-07	1.52E-07	3.64E-06	6.63E-07
7,12-Dimethylbenz(a)anthracene	1.60E-05		3	8.34E-07	3.27E-06	7.62E-07	2.53E-06	8.44E-07	2.19E-08	2.19E-08	1.35E-06	1.16E-02	5.89E-06	1.35E-06	3.23E-05	5.89E-06
Acenaphthyle	1.51E-05		3	7.85E-07	3.11E-06	7.24E-07	2.40E-06	8.02E-07	2.08E-08	2.08E-08	1.28E-06	1.09E-02	5.47E-06	1.28E-06	3.07E-05	5.47E-06
Acenaphthene	1.80E-06		3	9.38E-08	3.68E-07	8.57E-08	2.84E-07	9.50E-08	2.46E-09	2.46E-09	1.52E-07	1.30E-03	6.63E-07	1.52E-07	3.64E-06	6.63E-07
Acenaphthylene	1.80E-06		3	9.38E-08	3.68E-07	8.57E-08	2.84E-07	9.50E-08	2.46E-09	2.46E-09	1.52E-07	1.30E-03	6.63E-07	1.52E-07	3.64E-06	6.63E-07
Anethene	1.80E-06		3	9.38E-08	3.68E-08	8.57E-08	2.84E-07	9.50E-08	2.46E-09	2.46E-09	1.52E-06	1.30E-02	6.63E-06	1.52E-06	3.64E-05	6.63E-06
Anthracene	2.40E-06		3	1.25E-07	4.91E-07	1.14E-07	3.79E-07	1.27E-07	3.28E-09	3.28E-09	2.02E-07	1.74E-03	8.84E-07	2.02E-07	4.85E-06	8.84E-07
Benz(a)anthracene	1.80E-06		3	9.38E-08	3.68E-07	8.57E-08	2.84E-07	9.50E-08	2.46E-09	2.46E-09	1.52E-07	1.30E-03	6.63E-07	1.52E-07	3.64E-06	6.63E-07
Benzene	2.12E-03		1	1.04E-04	4.85E-04	1.00E-04	3.52E-04	1.11E-04	2.87E-06	2.87E-06	1.77E-04	1.51E+00	7.76E-04	1.77E-04	4.24E-03	7.76E-04
Benzo(a)pyrene	1.20E-06		3	6.25E-08	2.46E-07	5.72E-08	1.90E-07	6.33E-08	1.64E-09	1.64E-09	1.01E-07	8.68E-04	4.42E-07	1.01E-07	2.42E-06	4.42E-07
Benzo(b)fluoranthene	1.80E-06		3	9.38E-08	3.68E-07	8.57E-08	2.84E-07	9.50E-08	2.46E-09	2.46E-09	1.52E-07	1.30E-03	6.63E-07	1.52E-07	3.64E-06	6.63E-07
Benzo(g,h,i)perylene	1.20E-06		3	6.25E-08	2.46E-07	5.72E-08	1.90E-07	6.33E-08	1.64E-09	1.64E-09	1.01E-07	8.68E-04	4.42E-07	1.01E-07	2.42E-06	4.42E-07
Benzo(k)fluoranthene	1.80E-06		3	9.38E-08	3.68E-07	8.57E-08	2.84E-07	9.50E-08	2.46E-09	2.46E-09	1.52E-07	1.30E-03	6.63E-07	1.52E-07	3.64E-06	6.63E-07
Butane	2.1		3	1.09E-01	4.30E-01	1.00E-01	3.32E-01	1.11E-01	2.87E-03	2.87E-03	1.77E-01	1.51E+03	7.76E-01	1.77E-01	4.24E+00	7.76E-01
Chrysene	1.80E-06		3	9.38E-08	3.68E-07	8.57E-08	2.84E-07	9.50E-08	2.46E-09	2.46E-09	1.52E-07	1.30E-03	6.63E-07	1.52E-07	3.64E-06	6.63E-07
Dibenz(a,h)anthracene	1.20E-06		3	6.25E-08	2.46E-07	5.72E-08	1.90E-07	6.33E-08	1.64E-09	1.64E-09	1.01E-07	8.68E-04	4.42E-07	1.01E-07	2.42E-06	4.42E-07
Dichlorobenzene	1.20E-03		3	6.25E-05	2.46E-04	5.72E-05	1.90E-04	6.33E-05	1.64E-06	1.64E-06	1.01E-04	8.68E-01	4.42E-04	1.01E-04	2.42E-03	4.42E-04
Ethane	3.1		3	1.62E-01	6.35E-01	1.48E-01	4.90E-01	1.64E-01	4.23E-03	4.23E-03	2.61E-01	2.23E+03	1.14E+00	2.61E-01	6.26E+00	1.14E+00
Fluoranthene	3.00E-06		3	1.56E-07	6.14E-07	1.43E-07	4.74E-07	1.58E-07	4.10E-09	4.10E-09	2.53E-07	2.16E-03	1.10E-06	2.53E-07	6.06E-06	1.10E-06
Fluorene	2.80E-06		3	1.46E-07	5.73E-07	1.33E-07	4.42E-07	1.48E-07	3.83E-09	3.83E-09	2.36E-07	2.02E-03	1.03E-06	2.36E-07	5.66E-06	1.03E-06
Formaldehyde	7.50E-02		1	3.91E-03	1.54E-02	3.57E-03	1.18E-02	3.96E-03	1.02E-04	1.02E-04	6.31E-03	5.40E+01	2.76E-02	6.31E-03	1.52E-01	2.76E-02
Hexane	1.8		3	9.38E-02	3.68E-01	8.57E-02	2.84E-01	9.50E-02	2.46E-03	2.46E-03	1.52E-01	1.30E+03	6.63E-01	1.52E-01	3.64E+00	6.63E-01
Indeno(1,2,3-cd)pyrene	1.80E-06		3	9.38E-08	3.68E-07	8.57E-08	2.84E-07	9.50E-08	2.46E-09	2.46E-09	1.52E-07	1.30E-03	6.63E-07	1.52E-07	3.64E-06	6.63E-07
Naphthalene	6.10E-04		3	3.18E-05	1.25E-04	2.91E-05	9.64E-05	3.22E-05	8.35E-07	8.35E-07	5.15E-05	4.40E-01	2.25E-04	5.15E-05	1.23E-03	2.25E-04
Pentane	2.6		3	1.36E-01	5.32E-01	1.24E-01	4.11E-01	1.37E-01	3.55E-03	3.55E-03	2.19E-01	1.87E+03	9.58E-01	2.19E-01	5.25E+00	9.58E-01
Phenanthrene	1.70E-05		3	8.86E-07	3.48E-06	8.10E-07	2.69E-06	8.97E-07	2.32E-08	2.32E-08	1.43E-06	1.22E-02	6.12E-06	1.43E-06	3.43E-05	6.12E-06
Propane	1.6		3	8.34E-02	3.27E-01	7.62E-02	2.53E-01	8.44E-02	2.19E-03	2.19E-03	1.35E-01	1.16E+03	5.89E-01	1.35E-01	3.23E+00	5.89E-01
Pyrene	5.00E-06		3	2.61E-07	1.02E-06	2.38E-07	7.90E-07	2.64E-07	6.83E-09	6.83E-09	4.21E-07	3.60E-03	1.84E-06	4.21E-07	1.01E-05	1.84E-06
Toluene	3.40E-03		3	1.77E-04	6.96E-04	1.62E-04	5.37E-04	1.79E-04	4.64E-06	4.64E-06	2.86E-04	2.45E+00	1.25E-03	2.86E-04	6.87E-03	1.25E-03
Arsenic	2.00E-04		3	1.04E-05	4.09E-05	9.54E-06	3.16E-05	1.06E-05	2.73E-07	2.73E-07	1.68E-05	1.44E-01	7.35E-05	1.68E-05	4.04E-04	7.35E-05
Barium	4.40E-03		3	2.29E-04	9.01E-04	2.10E-04	6.95E-04	2.32E-04	6.01E-06	6.01E-06	3.70E-04	3.17E+00	1.62E-03	3.70E-04	8.89E-03	1.62E-03
Beryllium	1.20E-05		3	6.25E-07	2.46E-06	5.72E-07	1.90E-06	6.33E-07	1.64E-08	1.64E-08	1.01E-06	8.68E-03	4.42E-06	1.01E-06	2.42E-05	4.42E-06
Cadmium	1.10E-03		3	5.73E-05	2.25E-04	5.24E-05	1.74E-04	5.80E-05	1.50E-06	1.50E-06	9.26E-05	7.93E-01	4.06E-04	9.26E-05	2.22E-03	4.06E-04
Chromium	7.00E-04		1,6	3.70E-05	1.46E-04	3.47E-05	1.13E-04	3.84E-05	8.95E-07	8.95E-07	6.13E-05	5.26E-01	2.69E-04	6.13E-05	1.47E-03	2.69E-04
Cobalt	8.40E-05		3	4.46E-06	1.75E-05	4.08E-06	1.35E-05	4.51E-06	1.15E-07	1.15E-07	7.07E-06	6.07E-02	3.10E-05	7.07E-06	1.70E-04	3.10E-05
Copper	8.50E-04		3	4.51E-05	1.77E-04	4.21E-05	1.36E-04	4.56E-05	1.16E-06	1.16E-06	7.16E-05	6.15E-01	3.26E-04	7.16E-05	1.72E-03	3.26E-04
Lead	5.00E-04		3	2.61E-05	1.02E-04	2.38E-05	7.90E-05	2.64E-05	6.83E-07	6.83E-07	4.21E-05	3.60E-01	1.84E-04	4.21E-05	1.01E-03	1.84E-04
Manganese	3.80E-04		3	1.98E-05	7.78E-05	1.81E-05	6.00E-05	2.01E-05	5.19E-07	5.19E-07	3.20E-05	2.74E-01	1.40E-04	3.20E-05	7.68E-04	1.40E-04
Mercury	2.60E-04		3	1.36E-05	5.32E-05	1.24E-05	4.11E-05	1.37E-05	3.55E-07	3.55E-07	2.19E-05	1.87E-01	9.58E-05	2.19E-05	5.25E-04	9.58E-05

EMISSIONS CALCULATIONS — **Nucor Steel**

Source: **Rolling Mill Operations (ES207)** — **Cofield, NC**

Oil and Grease Use (approximate 2014 annual)

Rolling/Finishing/Shipping, tons
102.3

Rolled Steel (tons)	1,265,589
Design Capacity (tons)	2,190,000
Percent Production	62%

0.67%

Compound Name	Weight % in O&G	Total Rolling/Finishing/Shipping				
		tpy	lb/hr	lb/day	lb/yr	tpy
Total VOC[1]	4.632%	4.738	1.08E+00	2.60E+01	9476.392	4.738
Total HAPs	0.873%	0.893	2.04E-01	4.89E+00	1785.968	0.893
Chloromethane	0.08%	0.013	2.69E-03	6.45E-02	23.529	0.012
Acrolein	0.46%	0.068	1.54E-02	3.71E-01	135.292	0.068
Carbon Disulfide	0.57%	0.084	1.91E-02	4.59E-01	167.644	0.084
Acetonitrile	0.07%	0.010	2.35E-03	5.64E-02	20.588	0.010
Methylene Chloride	0.89%	0.131	2.98E-02	7.17E-01	261.760	0.131
Hexane	1.34%	0.197	4.50E-02	1.08E+00	394.111	0.197
Benzene	0.07%	0.010	2.35E-03	5.64E-02	20.588	0.010
Methyl Isobutyl Ketone	0.06%	0.006	1.34E-03	3.22E-02	11.765	0.006
Toluene	0.22%	0.032	7.39E-03	1.77E-01	64.705	0.032
Ethylbenzene	0.06%	0.006	1.34E-03	3.22E-02	11.765	0.006
m-/ p-Xylenes	0.11%	0.016	3.69E-03	8.86E-02	32.352	0.016
o-Xylenes	0.05%	0.007	1.68E-03	4.03E-02	14.706	0.007
Styrene	0.02%	0.004	1.01E-03	2.42E-02	8.823	0.004
Acetaldehyde	1.11%	0.163	3.73E-02	8.94E-01	326.465	0.163
Methanol	0.62%	0.093	2.12E-02	5.08E-01	185.291	0.093
1,3 - Butadiene	0.02%	0.003	6.71E-04	1.61E-02	5.882	0.003
Chloroethane	0.02%	0.004	1.01E-03	2.42E-02	8.823	0.004
Chloroform	0.06%	0.009	2.01E-03	4.83E-02	17.647	0.009
Trichloroethene	0.04%	0.006	1.34E-03	3.22E-02	11.765	0.006
Carbon Tetrachloride	0.05%	0.007	1.68E-03	4.03E-02	14.706	0.007
1,4 - Dioxane	0.02%	0.003	6.71E-04	1.61E-02	5.882	0.003
Bromoform	0.09%	0.013	3.02E-03	7.25E-02	26.470	0.013
Naphthalene	0.04%	0.006	1.34E-03	3.22E-02	11.765	0.006

[1] Per emissions testing via corporate, in order to obtain the 4.632 wt% we first had to calculate the Wt% of Non-VOC (Methane, Ethane, Acetone). The Wt% of Non-VOC came out to be 67.78%, thus the remainder wt% assumed to be VOC was 32.22%. Next, in order to determine the percent of Oil/Grease volatilized as VOC (methane, ethane and acetone excluded) we took the wt% assumed to be VOC of 32.22% and multiplied it by the percent of Oil/Grease volatilized as THC (12.5%) from an EPA study. The result was 4.03% of Oil/Grease volatilized as VOC (methane, ethane, and acetone excluded). We simple took this percentage and added a 15% factor of safety to arrive at 4.632% of Oil/Grease volatilized as VOC and 0.873% HAP. Weight % for individual HAP do not include these assumptions, but the 12.5% volatilized and 15% safety factor is applied in the emissions calculations. (VOC/HAP Summary provided by Corporate)

[2] Melt shop emissions are based on the assumption that 10% of permitted emissions are released as fugitives and not from the stack (VOC/HAP Summary provided by Corporate). These emissions are included in the roof top monitor emissions.

Fugitive Sources	Actual		PTE[3]	
	VOC (tons)	HAP (tons)	VOC (tons)	HAP (tons)
Rolling/Finishing/Shipping Operations	4.74	0.89	7.60	1.43
Total	4.74	0.89	7.60	1.43

[3] PTE is based the percentage of rolled steel (E.) compared to permitted production capacity (7.)

ATTACHMENT II – RBLC Search Results

RBLCID	FACILITY_NAME	CORPORATE_OR_COMPANY_NAME	SIC_CODE	NAICS	DATE_DETERMINATION_LAST_UPDATED	PROCESS_NAME	THROUGHPUT	THROUGHPUT UNIT	CONTROL METHOD DESCRIPTION	EMISSION_LIMIT (LB/TON STEEL)	BASIS
*CO-0066	ERMS PUEBLO	CF & I STEEL L.P. DBA EVRAZ ROCKY MOUNTAIN STEEL	3312		2/25/2016	Electric Arc Furnace (EAF 5)	185	ton/hour	BACT for NOX, SO2, and CO has been determined to be the use of process controls	2	BACT-PSD
AL-0087	TRICO STEEL CO., LLC	TRICO STEEL CO., LLC	3312	331111	9/10/2002	FURNACE, ELECTRIC ARC - CARBON STEEL	440	T/H	DIRECT EVACUATION CANOPY (DEC)	2	BACT-PSD
AL-0129	IPSCO STEEL INC	IPSCO STEEL INC	3312	331111	9/12/2002	FURNACE, ELECTRIC ARC	200	T/H	DEC WITH POST-COMBUSTION	2	BACT-PSD
AL-0230	THYSSENKRUPP STEEL AND STAINLESS USA, LLC	THYSSENKRUPP STEEL AND STAINLESS USA, LLC	3312	331111	11/15/2013	MELTSHOP - LO (MULTIPLE EMISSION POINTS)	126	T/H		2	BACT-PSD
AL-0230	THYSSENKRUPP STEEL AND STAINLESS USA, LLC	THYSSENKRUPP STEEL AND STAINLESS USA, LLC	3312	331111	11/15/2013	MELTSHOP - LO (MULTIPLE EMISSION POINTS)	126	T/H		2	BACT-PSD
CO-0054	CF & I STEEL L.P. DBA ROCKY MOUNTAIN STEEL MILLS	CF & I STEEL L.P. DBA ROCKY MOUNTAIN STEEL MILLS	3312	331111	8/23/2006	ELECTRIC ARC FURNACE (EAF)	156	T/H	PROCESS CONTROLS, INCLUDING PATTERN OF CHARGING, RAW MATERIALS ADDITION, ETC.	2	Other Case-by-Case
CO-0061	CF&I STEEL L.P. DBA ROCKY MOUNTAIN STEEL MILLS	CF&I STEEL L.P. DBA ROCKY MOUNTAIN STEEL MILLS	3312	332111	3/31/2009	EAF #5	154	T/YR	PROCESS CONTROLS	2	BACT-PSD
MI-0404	GERDAU MACSTEEL, INC.	GERDAU MACSTEEL, INC.	3312	331111	5/4/2016	Melt Shop (FG-MELTSHOP)	130	T liquid steel per H	Direct Evacuation Control (DEC) and Co Reaction Chamber	2	BACT-PSD
OH-0350	REPUBLIC STEEL	REPUBLIC STEEL	3312	331111	5/4/2016	Electric Arc Furnace	150	T/H	Direct-Shell Evacuation Control system with adjustable air gap and water-cooled elbow and duct.	2	BACT-PSD
SC-0039	NUCOR STEEL	NUCOR STEEL	3312	331111	10/17/2002	ELECTRIC ARC FURNACE	165	TONS	FOAMING SLAG PROCESS AND DIRECT SHELL EVACUATION CONTROLS	2	BACT-PSD
AL-0202	CORUS TUSCALOOSA	CORUS TUSCALOOSA	3312	331111	1/24/2005	ELECTRIC ARC FURNACE	160	T/H	DIRECT EVACUATION CANOPY	2	BACT-PSD
AL-0197	NUCOR STEEL DECATUR, LLC	NUCOR STEEL DECATUR, LLC	3312	331111	8/25/2003	ELECTRIC ARC FURNACE, (2)	440	T/H		2	BACT-PSD
AR-0096	NUCOR YAMATO STEEL	NUCOR YAMATO STEEL	3312	331111	1/22/2009	ELECTRIC ARC FURNACE	500	T/STEEL / H	AIR GAP	2	BACT-PSD
AL-0218	NUCOR STEEL TUSCALOOSA, INC.	NUCOR STEEL TUSCALOOSA, INC.	3312	331111	7/31/2007	ELECTRIC ARC FURNACE	300	T/H	DIRECT EVACUATION CANOPY	2.2	BACT-PSD
*TX-0651	STEEL MILL	NUCOR CORPORATION	3312		3/20/2015	ELECTRIC ARC FURNACE	316	TPH	GOOD COMBUSTION PRACTICE	2.27	BACT-PSD
NC-0112	NUCOR STEEL	NUCOR STEEL	3312	331511	8/14/2007	MELT SHOP			DIRECT SHELL EVACUATION (DSE) VIA THE CONSTEEL PROCESS PLUS COMBUSTION CHAMBER (AIR GAP)	2.3	BACT-PSD
OH-0342	FAIRCREST STEEL	THE TIMKEN COMPANY	3312	331111	10/13/2011	Electric Arc Furnace	1300000	T/YR	Direct Evacuation Control system with adjustable air gap, elbow, and water cooled ductwork for enhanced burnout of CO.	3.5	BACT-PSD

OH-0339	HARRISON STEEL PLANT	THE TIMKEN COMPANY	3312	331111	10/13/2011	Electric Arc Furnace (2)	400000	T/YR	4.8	BACT-PSD

TABLE B-2

RBLCID	FACILITY_NAME	CORPORATE_OR_COMPANY_NAME	SIC_CODE	NAICS	DATE_DETERMINATION_LAST_UPDATED	PROCESS_NAME	THROUGHPUT	THROUGHPUT_UNIT	CONTROL_METHOD_DESCRIPTION	EMISSION_LIMIT_1 (LB/TON)	BASIS
CO-0054	CF & I STEEL L.P. DBA ROCKY MOUNTAIN STEEL MILLS	CF & I STEEL L.P. DBA ROCKY MOUNTAIN STEEL MILLS	3312	331111	8/23/2006	ELECTRIC ARC FURNACE (EAF)	156	T/H	GOOD COMBUSTION PRACTICES.	0.15	Other Case-by-Case
CO-0061	CF&I STEEL L.P. DBA ROCKY MOUNTAIN STEEL MILLS	CF&I STEEL L.P. DBA ROCKY MOUNTAIN STEEL MILLS	3312	332111	3/31/2009	EAF #5	154	T/YR	OPERATING PRACTICES	0.15	BACT-PSD
MI-0404	GERDAU MACSTEEL, INC.	GERDAU MACSTEEL, INC.	3312	331111	5/4/2016	Melt Shop (FG-MELTSHOP)	130	T liquid steel per	Real time process optimization (combustion controls) and the use of oxy-fuel burners.	0.2	BACT-PSD
OH-0339	HARRISON STEEL PLANT	THE TIMKEN COMPANY	3312	331111	0/13/2011	Electric Arc Furnace (2)	400000	T/YR		0.2	OTHER CASE-BY-CASE
OH-0342	FAIRCREST STEEL	THE TIMKEN COMPANY	3312	331111	0/13/2011	Electric Arc Furnace	1300000	T/YR		0.2	OTHER CASE-BY-CASE
*CO-0066	ERMS PUEBLO	CF & I STEEL L.P. DBA EVRAZ ROCKY MOUNTAIN STEEL	3312		2/25/2016	Electric Arc Furnace (EAF 5)	185	ton/hour	BACT for NOX, SO2, and CO has been determined to be the use of process controls	0.28	BACT-PSD
OH-0315	NEW STEEL INTERNATIONAL, INC., HAVERHILL	NEW STEEL INTERNATIONAL, INC.	3312	331513	5/18/2012	ELECTRIC ARC FURNACE (2)	331	T/H	LOW NOX OXY-FUEL BURNERS	0.321	BACT-PSD
AL-0087	TRICO STEEL CO., LLC	TRICO STEEL CO., LLC	3312	331111	9/10/2002	FURNACE, ELECTRIC ARC - CARBON STEEL	440	T/H	DIRECT EVACUATION CANOPY (DEC)	0.35	BACT-PSD
AL-0218	NUCOR STEEL TUSCALOOSA, INC.	NUCOR STEEL TUSCALOOSA, INC.	3312	331111	7/31/2007	ELECTRIC ARC FURNACE	300	T/H		0.35	BACT-PSD
AL-0230	THYSSENKRUPP STEEL AND STAINLESS USA, LLC	THYSSENKRUPP STEEL AND STAINLESS USA, LLC	3312	331111	11/15/2013	MELTSHOP - LO (MULTIPLE EMISSION POINTS)	126	T/H	LOW NOX BURNERS	0.35	BACT-PSD
AL-0230	THYSSENKRUPP STEEL AND STAINLESS USA, LLC	THYSSENKRUPP STEEL AND STAINLESS USA, LLC	3312	331111	11/15/2013	MELTSHOP - LO (MULTIPLE EMISSION POINTS)	126	T/H	LOW NOX OXYFUEL BURNERS	0.35	BACT-PSD
OH-0245	REPUBLIC TECHNOLOGIES INTERNATIONAL	REPUBLIC TECHNOLOGIES INTERNATIONAL/CANTON	3312	331211	6/4/2003	ELECTRIC ARC FURNACE (EAF) NO. 9, P907	165	T/H	LOOKED AT SCR, SNCR, AND FGR ALL INFEASIBLE	0.35	BACT-PSD
SC-0039	NUCOR STEEL	NUCOR STEEL	3312	331111	0/17/2002	ELECTRIC ARC FURNACE	165	TONS	LOW NOX BURNERS IN ELECTRIC ARC FURNACE SHELLS	0.35	BACT-PSD
AL-0202	CORUS TUSCALOOSA	CORUS TUSCALOOSA	3312	331111	1/24/2005	ELECTRIC ARC FURNACE	160	T/H		0.35	BACT-PSD
NC-0112	NUCOR STEEL	NUCOR STEEL	3312	331511	8/14/2007	MELT SHOP				0.36	BACT-PSD
AL-0129	IPSCO STEEL INC	IPSCO STEEL INC	3312	331111	9/12/2002	FURNACE, ELECTRIC ARC	200	T/H		0.4	BACT-PSD
AL-0197	NUCOR STEEL DECATUR, LLC	NUCOR STEEL DECATUR, LLC	3312	331111	8/25/2003	ELECTRIC ARC FURNACE, (2)	440	T/H		0.4	BACT-PSD
OH-0350	REPUBLIC STEEL	REPUBLIC STEEL	3312	331111	5/4/2016	Electric Arc Furnace	150	T/H		0.5	N/A
*TX-0651	STEEL MILL	NUCOR CORPORATION	3312		3/20/2015	ELECTRIC ARC FURNACE	316	TPH	OXY FIRED BURNERS	0.9	BACT-PSD

TABLE B-5

RBLCID	FACILITY_NAME	CORPORATE_OR_COMPANY_NAME	SIC_CODE	NAICS	DATE_DETERMINATION_LAST_UPDATED	PROCESS_NAME	THROUGHPUT	THROUGHPUT_UNIT	CONTROL_METHOD_DESCRIPTION	EMISSION LIMIT (LB/TON)	CASE-BY-CASE_BASIS
AL-0087	TRICO STEEL CO., LLC	TRICO STEEL CO., LLC	3312	331111	9/10/2002	FURNACE, ELECTRIC ARC - CARBON STEEL	440	T/H	SCRAP MANAGEMENT	0.09	BACT-PSD
OH-0315	NEW STEEL INTERNATIONAL, INC., HAVERHILL	NEW STEEL INTERNATIONAL, INC.	3312	331513	5/18/2012	ELECTRIC ARC FURNACE (2)	331	T/H		0.13	BACT-PSD
AL-0230	THYSSENKRUPP STEEL AND STAINLESS USA, LLC	THYSSENKRUPP STEEL AND STAINLESS USA, LLC	3312	331111	11/15/2013	MELTSHOP - LO (MULTIPLE EMISSION POINTS)	126	T/H		0.15	BACT-PSD
AL-0230	THYSSENKRUPP STEEL AND STAINLESS USA, LLC	THYSSENKRUPP STEEL AND STAINLESS USA, LLC	3312	331111	11/15/2013	MELTSHOP - LO (MULTIPLE EMISSION POINTS)	126	T/H		0.15	BACT-PSD
*CO-0066	ERMS PUEBLO	CF & I STEEL L.P. DBA EVRAZ ROCKY MOUNTAIN STEEL	3312		2/25/2016	Electric Arc Furnace (EAF 5)	185	ton/hour	BACT for NOX, SO2, and CO has been determined to be the use of process controls	0.15	BACT-PSD
MI-0404	GERDAU MACSTEEL, INC.	GERDAU MACSTEEL, INC.	3312	331111	5/4/2016	Melt Shop (FG-MELTSHOP)	130	T liquid steel per H		0.2	BACT-PSD
SC-0039	NUCOR STEEL	NUCOR STEEL	3312	331111	10/17/2002	ELECTRIC ARC FURNACE	165	TONS	SULFUR CONTENT OF COKE<0.65%	0.2	BACT-PSD
AR-0096	NUCOR YAMATO STEEL	NUCOR YAMATO STEEL	3312	331111	1/22/2009	ELECTRIC ARC FURNACE	500	T/STEEL / H	LOW SULFUR COKE AND SCRAP MANAGEMENT	0.2	BACT-PSD
AR-0078	NUCOR STEEL, ARKANSAS	NUCOR CORPORATION	3312	331111	5/10/2007	EAF	425	t/h	SCRAP MANAGEMENT	0.2	BACT-PSD
CO-0054	CF & I STEEL L.P. DBA ROCKY MOUNTAIN STEEL MILLS	CF & I STEEL L.P. DBA ROCKY MOUNTAIN STEEL MILLS	3312	331111	8/23/2006	ELECTRIC ARC FURNACE (EAF)	156	T/H	ALTERNATIVE RAW MATERIALS + PROCESS CONTROLS	0.25	Other Case-by-Case
CO-0061	CF&I STEEL L.P. DBA ROCKY MOUNTAIN STEEL MILLS	CF&I STEEL L.P. DBA ROCKY MOUNTAIN STEEL MILLS	3312	332111	3/31/2009	EAF #5	154	T/YR	ALTERNATIVE RAW MATERIALS AND PROCESS CONTROLS	0.25	BACT-PSD
IN-0108	NUCOR STEEL	NUCOR STEEL	3312	331111	12/4/2012	EAF, AOD VESSELS, DESULFURIZATION, & OTHER PROCESS	502	T/H	SCRAP MANAGEMENT PLAN. COMPLIANCE METHOD: SO2 CEM.	0.25	BACT-PSD
NC-0112	NUCOR STEEL	NUCOR STEEL	3312	331511	8/14/2007	MELT SHOP			SCRAP MANAGEMENT	0.35	BACT-PSD
OH-0350	REPUBLIC STEEL	REPUBLIC STEEL	3312	331111	5/4/2016	Electric Arc Furnace	150	T/H		0.39	N/A
OH-0339	HARRISON STEEL PLANT	THE TIMKEN COMPANY	3312	331111	10/13/2011	Electric Arc Furnace (2)	400000	T/YR		0.44	OTHER CASE-BY-CASE
AL-0218	NUCOR STEEL TUSCALOOSA, INC.	NUCOR STEEL TUSCALOOSA, INC.	3312	331111	7/31/2007	ELECTRIC ARC FURNACE	300	T/H	UTILIZATION OF A SCRAP MANAGEMENT PROGRAM	0.46	BACT-PSD
OH-0342	FAIRCREST STEEL	THE TIMKEN COMPANY	3312	331111	10/13/2011	Electric Arc Furnace	1300000	T/YR		0.52	OTHER CASE-BY-CASE
AL-0202	CORUS TUSCALOOSA	CORUS TUSCALOOSA	3312	331111	1/24/2005	ELECTRIC ARC FURNACE	160	T/H		0.62	BACT-PSD
AL-0197	NUCOR STEEL DECATUR, LLC	NUCOR STEEL DECATUR, LLC	3312	331111	8/25/2003	ELECTRIC ARC FURNACE, (2)	440	T/H		0.62	BACT-PSD

AL-0129	IPSCO STEEL INC	IPSCO STEEL INC	3312	331111	9/12/2002	FURNACE, ELECTRIC ARC	200	T/H		0.7	BACT-PSD
NC-0112	NUCOR STEEL	NUCOR STEEL	3312	331511	8/14/2007	MELT SHOP ROOF MONITORS				1.5	BACT-PSD
*TX-0651	STEEL MILL	NUCOR CORPORATION	3312		3/20/2015	ELECTRIC ARC FURNACE	316	TPH	GOOD PROCESS OPERATION AND SCRAP MANAGEMENT	1.76	BACT-PSD

TABLE B-5

RBLCID	FACILITY_NAME	CORPORATE_OR_COMPANY_NAME	SIC_CODE	NAICS	DATE_DETERMINATION_LAST_UP DATED	PROCESS_NAME	THROUGHPUT	THROUGHPUT_UNIT	POLLUTANT	CONTROL_METHOD_DESCRIPTION	EMISSION_LIMIT_1	EMISSION_LIMIT_1_UNIT	EMISSION_LIMIT_1_AVG_TIME_CONDITION	CASE-BY-CASE_BASIS
OH-0339	HARRISON STEEL PLANT	THE TIMKEN COMPANY	3312	331111	10/13/2011	Electric Arc Furnace (2)	400000	T/YR	Particulate matter, filterable < 10 = (FPM10)	Baghouse on melt shop building evacuation system	0.0003	GR/DSCF	BAGHOUSE	OTHER CASE-BY-CASE
OH-0342	FAIRCREST STEEL	THE TIMKEN COMPANY	3312	331111	10/13/2011	Electric Arc Furnace	1300000	T/YR	Particulate matter, total < 2.5 = (TPM2.5)	Roof canopy hood fume collecion system with Direct Evacuation Control to baghouse	0.0009	GR/DSCF		OTHER CASE-BY-CASE
OH-0315	NEW STEEL INTERNATIONAL, INC., HAVERHILL	NEW STEEL INTERNATIONAL, INC.	3312	331513	5/18/2012	ELECTRIC ARC FURNACE (2)	331	T/H	Particulate Matter (PM)	BAGHOUSE AND DIRECT EVACUATION CONTROL W/ 100% CAPTURE EFFICIENCY	0.0014	GR/DSCF	CH BAGHOUSE (2) TO EAF AND	BACT-PSD
OH-0342	FAIRCREST STEEL	THE TIMKEN COMPANY	3312	331111	10/13/2011	Electric Arc Furnace	1300000	T/YR	Particulate matter, total < 10 = (TPM10)	Roof canopy hood fume collecion system with Direct Evacuation Control to baghouse	0.0017	GR/DSCF		OTHER CASE-BY-CASE
*CO-0066	ERMS PUEBLO	CF & I STEEL L.P. DBA EVRAZ ROCKY MOUNTAIN STEEL	3312		2/25/2016	Electric Arc Furnace (EAF 5)	185	ton/hour	Particulate matter, total (TPM)	Baghouse	0.0018	GRAIN PER DSCF	FILTERABLE	BACT-PSD
AL-0218	NUCOR STEEL TUSCALOOSA, INC.	NUCOR STEEL TUSCALOOSA, INC.	3312	331111	7/31/2007	ELECTRIC ARC FURNACE	300	T/H	Particulate matter, filterable < 10 = (FPM10)	DIRECT EVACUATION CANOPY, ELEPHANT HOUSE, AND BAGHOUSE	0.0018	GR/DSCF		BACT-PSD
AL-0230	THYSSENKRUPP STEEL AND STAINLESS USA, LLC	THYSSENKRUPP STEEL AND STAINLESS USA, LLC	3312	331111	11/15/2013	MELTSHOP - LO (MULTIPLE EMISSION POINTS)	126	T/H	Particulate matter, filterable < 10 = (FPM10)	BAGHOUSE	0.0018	GR/DSCF		BACT-PSD
AL-0230	THYSSENKRUPP STEEL AND STAINLESS USA, LLC	THYSSENKRUPP STEEL AND STAINLESS USA, LLC	3312	331111	11/15/2013	MELTSHOP - LO (MULTIPLE EMISSION POINTS)	126	T/H	Particulate matter, filterable < 10 = (FPM10)	BAGHOUSE	0.0018	GR/DSCF		BACT-PSD
CO-0054	CF & I STEEL L.P. DBA ROCKY MOUNTAIN STEEL MILLS	CF & I STEEL L.P. DBA ROCKY MOUNTAIN STEEL MILLS	3312	331111	8/23/2006	ELECTRIC ARC FURNACE (EAF)	156	T/H	Particulate matter, filterable < 10 = (FPM10)	HIGH EFFICIENCY FILTER BAGHOUSE WITH PTFE OR PTFE OVER FIBERGLASS/NOMEX/ARAMID/POLYESTER MATERIALS.	0.0018	GR/DSCF	Filterable outlet loading	Other Case-by-Case
NC-0112	NUCOR STEEL	NUCOR STEEL	3312	331511	8/14/2007	MELT SHOP			Particulate matter, filterable (FPM)	ONE (1) BAGHOUSE, NEGATIVE PRESSURE, REVERSE AIR CLEANING, THREE FEET PER MINUTE FILTER VELOCITY, AND 1.16 MILLION DSCFM FLOW RATE	0.0018	GR/DSCF		BACT-PSD
*CO-0066	ERMS PUEBLO	CF & I STEEL L.P. DBA EVRAZ ROCKY MOUNTAIN STEEL	3312		2/25/2016	Electric Arc Furnace (EAF 5)	185	ton/hour	Particulate matter, total < 10 = (TPM10)	Baghouse	0.0018	GR PER DSCF	FILTERABLE	BACT-PSD
*CO-0066	ERMS PUEBLO	CF & I STEEL L.P. DBA EVRAZ ROCKY MOUNTAIN STEEL	3312		2/25/2016	Electric Arc Furnace (EAF 5)	185	ton/hour	Particulate matter, total < 2.5 = (TPM2.5)	baghouse	0.0018	GR PER DSCF	FILTERABLE	BACT-PSD
AR-0078	NUCOR STEEL, ARKANSAS	NUCOR CORPORATION	3312	331111	5/10/2007	EAF	425	t/h	Particulate matter, filterable < 10 = (FPM10)	FABRIC FILTER	0.0018	GR/DSCF		BACT-PSD
AR-0096	NUCOR YAMATO STEEL	NUCOR YAMATO STEEL	3312	331111	1/22/2009	ELECTRIC ARC FURNACE	500	T/STEEL / H	Particulate matter, filterable < 10 = (FPM10)	BAGHOUSE	0.0018	GR/DSCF		BACT-PSD

TN-0155	NUCOR STEEL CORPORATION	NUCOR STEEL CORPORATION	3312	331112	3/12/2004	ELECTRIC ARC FURNACE	150	T/H	Particulate matter, filterable < 10 = (FPM10)	THE PROPER OPERATION OF THE EAF AND DEC SYSTEMS, EAF BAGHOUSE	0.002	GR/DSCF			BACT-PSD
MN-0070	MINNESOTA STEEL INDUSTRIES, LLC		3312	331111	10/30/2008	ELECTRIC ARC FURNACE/MELT SHOP	205	T/H	Particulate matter, filterable < 10 = (FPM10)	BAGHOUSE	0.003	GR/DSCF	3 HOUR AVERAGE		BACT-PSD
NJ-0040	CO-STEEL RARITAN	CO-STEEL RARITAN	3312	331111	11/19/2002	ELECTRIC ARC FURNACE	1160320	T/YR	Particulate Matter (PM)	PSE AND CANOPY HOOD DRAW EXHAUST GASES TO BAGHOUSES WITH CAPACITY OF 1,000,000 ACFM	0.003	GR/DSCF			BACT-PSD
NJ-0040	CO-STEEL RARITAN	CO-STEEL RARITAN	3312	331111	11/19/2002	ELECTRIC ARC FURNACE	1160320	T/YR	Particulate matter, filterable < 10 = (FPM10)	PSE AND CANOPY HOOD DRAW EXHAUST GASES TO BAGHOUSES WITH CAPACITY OF 1,000,000 ACFM.	0.003	GR/DSCF			BACT-PSD
AL-0087	TRICO STEEL CO., LLC	TRICO STEEL CO., LLC	3312	331111	9/10/2002	FURNACE, ELECTRIC ARC - CARBON STEEL	440	T/H	Particulate Matter (PM)	NEGATIVE PRESSURE BAGHOUSE WITH STACK	0.0032	GR/DSCF			BACT-PSD
AL-0197	NUCOR STEEL DECATUR, LLC	NUCOR STEEL DECATUR, LLC	3312	331111	8/25/2003	ELECTRIC ARC FURNACE, (2)	440	T/H	Particulate Matter (PM)	BAGHOUSE	0.0032	GR/DSCF			BACT-PSD
*TX-0651	STEEL MILL	NUCOR CORPORATION	3312		3/20/2015	ELECTRIC ARC FURNACE	316	TPH	Particulate matter, total (TPM)	ENCLOSURE, CAPTURE, FABRIC FILTER	0.0032	GR/DSCF			MACT
*TX-0651	STEEL MILL	NUCOR CORPORATION	3312		3/20/2015	ELECTRIC ARC FURNACE	316	TPH	Particulate matter, filterable < 10 = (FPM10)	ENCLOSURE, CAPTURE, FABRIC FILTER	0.0032	GR/DSCF			MACT
*TX-0651	STEEL MILL	NUCOR CORPORATION	3312		3/20/2015	ELECTRIC ARC FURNACE	316	TPH	Particulate matter, filterable < 2.5 = (FPM2.5)	ENCLOSURE, CAPTURE, FABRIC FILTER	0.0032	GR/DSCF			MACT
OH-0315	NEW STEEL INTERNATIONAL, INC., HAVERHILL	NEW STEEL INTERNATIONAL, INC.	3312	331513	5/18/2012	ELECTRIC ARC FURNACE (2)	331	T/H	Particulate matter, filterable < 2.5 = (FPM2.5)	BAGHOUSE AND DIRECT EVACUATION CONTROL W/ 100% CAPTURE EFFICIENCY	0.0032	GR/DSCF	CH BAGHOUSE (2) TO EAF AND		LAER
OH-0245	REPUBLIC TECHNOLOGIES INTERNATIONAL	REPUBLIC TECHNOLOGIES INTERNATIONAL/CANTON	3312	331211	6/4/2003	ELECTRIC ARC FURNACE (EAF) NO. 9, P907	165	T/H	Particulate matter, filterable < 10 = (FPM10)	FABRIC FILTER, STACK TEST WAS NOT DONE FOR PM10	0.0032	GR/DSCF			N/A
OH-0245	REPUBLIC TECHNOLOGIES INTERNATIONAL	REPUBLIC TECHNOLOGIES INTERNATIONAL/CANTON	3312	331211	6/4/2003	ELECTRIC ARC FURNACE (EAF) NO. 7, P905	85	T/H	Particulate Matter (PM)	FABRIC FILTER, DIRECT EVACUATION CONTROL (DEC) AND BUILDING EVACUATION SYSTEM	0.0032	GR/DSCF			N/A
OH-0245	REPUBLIC TECHNOLOGIES INTERNATIONAL	REPUBLIC TECHNOLOGIES INTERNATIONAL/CANTON	3312	331211	6/4/2003	ELECTRIC ARC FURNACE (EAF) NO. 9, P907	165	T/H	Particulate Matter (PM)	FABRIC FILTER, DIRECT EVACUATION CONTROL (DEC) AND BUILDING EVACUATION SYSTEM	0.0032	GR/DSCF			N/A
AL-0129	IPSCO STEEL INC	IPSCO STEEL INC	3312	331111	9/12/2002	FURNACE, ELECTRIC ARC	200	T/H	Particulate Matter (PM)	BAGHOUSE WITH STACK	0.0033	GR/DSCF			BACT-PSD
OH-0350	REPUBLIC STEEL	REPUBLIC STEEL	3312	331111	5/4/2016	Electric Arc Furnace	150	T/H	Particulate matter, total < 2.5 = (TPM2.5)	Direct-Shell Evacuation Control system with adjustable air gap and water-cooled elbow and duct to Baghouse	0.0033	GR/DSCF			N/A
OH-0350	REPUBLIC STEEL	REPUBLIC STEEL	3312	331111	5/4/2016	Electric Arc Furnace	150	T/H	Particulate matter, total < 10 = (TPM10)	Direct-Shell Evacuation Control system with adjustable air gap and water-cooled elbow and duct to Baghouse	0.0034	GR/DSCF			N/A
SC-0039	NUCOR STEEL	NUCOR STEEL	3312	331111	10/17/2002	ELECTRIC ARC FURNACE	165	TONS	Particulate Matter (PM)	NEGATIVE PRESSURE BAGHOUSE	0.0035	GR/DSCF			BACT-PSD
AL-0202	CORUS TUSCALOOSA	CORUS TUSCALOOSA	3312	331111	1/24/2005	ELECTRIC ARC FURNACE	160	T/H	Particulate Matter (PM)	DIRECT EVACUATION CANOPY, ELEPHANT HOUSE, AND MELTSHOP BAGHOUSE	0.0035	GR/DSCF			BACT-PSD

OH-0341	NUCOR STEEL MARION, INC.	NUCOR STEEL	3312	331111	10/13/2011	EAR, Continuous casting, and 6 pre-heaters	1800	T/D	Particulate matter, total < 2.5 = (TPM2.5)	Building enclosure equipped with a canopy hood/baghouse system capable of achiieving 100% capture of meltshop emissions.	0.0049	GR/DSCF		BACT-PSD
AL-0230	THYSSENKRUPP STEEL AND STAINLESS USA, LLC	THYSSENKRUPP STEEL AND STAINLESS USA, LLC	3312	331111	11/15/2013	MELTSHOP - LO (MULTIPLE EMISSION POINTS)	126	T/H	Particulate matter, filterable < 10 = (FPM10)	BAGHOUSE	0.005	GR/DSCF	EACH	BACT-PSD
CO-0054	CF & I STEEL L.P. DBA ROCKY MOUNTAIN STEEL MILLS	CF & I STEEL L.P. DBA ROCKY MOUNTAIN STEEL MILLS	3312	331111	8/23/2006	ELECTRIC ARC FURNACE (EAF)	156	T/H	Particulate Matter (PM)	FF(FABRIC FILTER)	0.0052	GR/DSCF	Total PM including condensible	BACT-PSD
CO-0061	CF&I STEEL L.P. DBA ROCKY MOUNTAIN STEEL MILLS	CF&I STEEL L.P. DBA ROCKY MOUNTAIN STEEL MILLS	3312	332111	3/31/2009	EAF #5	154	T/YR	Particulate Matter (PM)	FABRIC FILTERS	0.0052	GR/DSCF	INCLUDING CONDENSIBLE PM	BACT-PSD
NC-0112	NUCOR STEEL	NUCOR STEEL	3312	331511	8/14/2007	MELT SHOP			Particulate Matter (PM)	ONE (1) BAGHOUSE, NEGATIVE PRESSURE, REVERSE AIR CLEANING, THREE FEET PER MINUTE FILTER VELOCITY, AND 1.16 MILLION DSCFM FLOW RATE; FRONT AND BACK HALF PM	0.0052	GR/DSCF		BACT-PSD
CO-0061	CF&I STEEL L.P. DBA ROCKY MOUNTAIN STEEL MILLS	CF&I STEEL L.P. DBA ROCKY MOUNTAIN STEEL MILLS	3312	332111	3/31/2009	EAF #5	154	T/YR	Particulate matter, filterable < 10 = (FPM10)	FABRIC FILTERS.	0.0052	GR/DSCF	INCLUDING CONDENSIBLE PM	BACT-PSD
IN-0108	NUCOR STEEL	NUCOR STEEL	3312	331111	12/4/2012	EAF, AOD VESSELS, DESULFURIZATION, & OTHER PROCESS	502	T/H	Particulate matter, filterable < 10 = (FPM10)	BAGHOUSES. COMPLIANCE METHOD: STACK TESTING AND BAG LEAK DETECTION SYSTEM	0.0052	GR/DSCF		BACT-PSD
OH-0350	REPUBLIC STEEL	REPUBLIC STEEL	3312	331111	5/4/2016	Electric Arc Furnace	150	T/H	Particulate matter, filterable (FPM)	Direct-Shell Evacuation Control system with adjustable air gap and water-cooled elbow and duct to Baghouse	0.0052	GR/DSCF		N/A
*TX-0651	STEEL MILL	NUCOR CORPORATION	3312		3/20/2015	ELECTRIC ARC FURNACE	316	TPH	Particulate matter, total < 10 = (TPM10)	ENCLOSURE, CAPTURE, FABRIC FILTER	0.0052	GR/DSCF		MACT
*TX-0651	STEEL MILL	NUCOR CORPORATION	3312		3/20/2015	ELECTRIC ARC FURNACE	316	TPH	Particulate matter, total < 2.5 = (TPM2.5)	ENCLOSURE, CAPTURE, FABRIC FILTER	0.0052	GR/DSCF		MACT

TABLE B.5

RBLCID	FACILITY_NAME	CORPORATE_OR_COMPANY_NAME	SIC_CODE	NAICS	DATE_DETERMINATION_LAST_UPDATED	PROCESS_NAME	THROUGHPUT	THROUGHPUT_UNIT	CONTROL_METHOD_DESCRIPTION	EMISSION_LIMIT_1 (LB/TON)	BASIS
AL-0230	THYSSENKRUPP STEEL AND STAINLESS USA, LLC	THYSSENKRUPP STEEL AND STAINLESS USA, LLC	3312	331111	11/15/2013	MELTSHOP - LO (MULTIPLE EMISSION POINTS)	126	T/H	SCRAP MANAGEMENT PLAN	0.03	BACT-PSD
AL-0230	THYSSENKRUPP STEEL AND STAINLESS USA, LLC	THYSSENKRUPP STEEL AND STAINLESS USA, LLC	3312	331111	11/15/2013	MELTSHOP - LO (MULTIPLE EMISSION POINTS)	126	T/H	SCRAP MANAGEMENT PLAN	0.03	BACT-PSD
OH-0315	NEW STEEL INTERNATIONAL, INC., HAVERHILL	NEW STEEL INTERNATIONAL, INC.	3312	331513	5/18/2012	ELECTRIC ARC FURNACE (2)	331	T/H		0.072	BACT-PSD
AR-0078	NUCOR STEEL, ARKANSAS	NUCOR CORPORATION	3312	331111	5/10/2007	EAF	425	t/h	SCRAP MANAGEMENT	0.088	BACT-PSD
OH-0350	REPUBLIC STEEL	REPUBLIC STEEL	3312	331111	5/4/2016	Electric Arc Furnace	150	T/H	Scrap management and Direct-Shell Evacuation Control system with adjustable air gap and water-cooled elbow and duct.	0.1	BACT-PSD
AL-0202	CORUS TUSCALOOSA	CORUS TUSCALOOSA	3312	331111	1/24/2005	ELECTRIC ARC FURNACE	160	T/H	DEC AND GOOD SCRAP QUALITY	0.13	BACT-PSD
AR-0096	NUCOR YAMATO STEEL	NUCOR YAMATO STEEL	3312	331111	1/22/2009	ELECTRIC ARC FURNACE	500	T/STEEL / H	SCRAP MANAGEMENT	0.13	BACT-PSD
AL-0218	NUCOR STEEL TUSCALOOSA, INC.	NUCOR STEEL TUSCALOOSA, INC.	3312	331111	7/31/2007	ELECTRIC ARC FURNACE	300	T/H	UTILIZATION OF SCRAP MANAGEMENT PROGRAM	0.13	BACT-PSD
CO-0054	CF & I STEEL L.P. DBA ROCKY MOUNTAIN STEEL MILLS	CF & I STEEL L.P. DBA ROCKY MOUNTAIN STEEL MILLS	3312	331111	8/23/2006	ELECTRIC ARC FURNACE (EAF)	156	T/H	PROCESS AND RAW MATERIAL CONTROLS.	0.13	Other Case-by-Case
CO-0061	CF&I STEEL L.P. DBA ROCKY MOUNTAIN STEEL MILLS	CF&I STEEL L.P. DBA ROCKY MOUNTAIN STEEL MILLS	3312	332111	3/31/2009	EAF #5	154	T/YR	PROCESS AND RAW MATERIAL CONTROLS.	0.13	BACT-PSD
*CO-0066	ERMS PUEBLO	CF & I STEEL L.P. DBA EVRAZ ROCKY MOUNTAIN STEEL	3312		2/25/2016	Electric Arc Furnace (EAF 5)	185	ton/hour	The proportion of oily scrap (borings, turnings, properly drained used oil filters, etc.) charged in each batch shall not exceed 3% of the total scrap. Compliance records shall be maintained and made available to the Division for review upon request.	0.13	BACT-PSD
MI-0404	GERDAU MACSTEEL, INC.	GERDAU MACSTEEL, INC.	3312	331111	5/4/2016	Melt Shop (FG-MELTSHOP)	130	T liquid steel per H	Direct Evacuation Control (DEC) and VOC Reaction Chamber.	0.13	BACT-PSD
NC-0112	NUCOR STEEL	NUCOR STEEL	3312	331511	8/14/2007	MELT SHOP				0.13	BACT-PSD
SC-0039	NUCOR STEEL	NUCOR STEEL	3312	331111	10/17/2002	ELECTRIC ARC FURNACE	165	TONS	SCRAP MANAGEMENT PROGRAM	0.13	BACT-PSD
OH-0342	FAIRCREST STEEL	THE TIMKEN COMPANY	3312	331111	10/13/2011	Electric Arc Furnace	1300000	T/YR		0.17	BACT-PSD
AL-0197	NUCOR STEEL DECATUR, LLC	NUCOR STEEL DECATUR, LLC	3312	331111	8/25/2003	ELECTRIC ARC FURNACE, (2)	440	T/H		0.2	BACT-PSD
AL-0087	TRICO STEEL CO., LLC	TRICO STEEL CO., LLC	3312	331111	9/10/2002	FURNACE, ELECTRIC ARC - CARBON STEEL	440	T/H	SCRAP MANAGEMENT	0.2	BACT-PSD
AL-0129	IPSCO STEEL INC	IPSCO STEEL INC	3312	331111	9/12/2002	FURNACE, ELECTRIC ARC	200	T/H	DEC WITH POST COMBUSTION CHAMBER	0.35	BACT-PSD
OH-0339	HARRISON STEEL PLANT	THE TIMKEN COMPANY	3312	331111	10/13/2011	Electric Arc Furnace (2)	400000	T/YR		0.37	BACT-PSD
*TX-0651	STEEL MILL	NUCOR CORPORATION	3312		3/20/2015	ELECTRIC ARC FURNACE	316	TPH	GOOD COMBUSTION PRACTICE AND PROCESS CONTROL	0.43	BACT-PSD

TABLE B-6. RBLC TABLE - LEAD

RBLCID	FACILITY_NAME	CORPORATE_OR_COMPANY_NAME	SIC_CODE	NAICS	DATE_DETERMINATION_LAST_UPDATED	PROCESS_NAME	THROUGHPUT	THROUGHPUT_UNIT	CONTROL_METHOD_DESCRIPTION	EMISSION_LIMIT_1 (LB/TON)	EMISSION_LIMIT_1_ UNIT	CASE-BY-CASE_BASIS
OH-0315	NEW STEEL INTERNATIONAL, INC., HAVERHILL	NEW STEEL INTERNATIONAL, INC.	3312	331513	5/18/2012	ELECTRIC ARC FURNACE (2)	331	T/H	BAGHOUSE AND DIRECT EVACUATION CONTROL W/ 100% CAPTURE EFFICIENCY	0.0002	LB/T	Other Case-by-Case
SC-0039	NUCOR STEEL	NUCOR STEEL	3312	331111	10/17/2002	ELECTRIC ARC FURNACE	165	TONS	NEGATIVE PRESSURE BAGHOUSE	0.0003	LB/T	BACT-PSD
OH-0339	HARRISON STEEL PLANT	THE TIMKEN COMPANY	3312	331111	10/13/2011	Electric Arc Furnace (2)	400000	T/YR	Baghouse on melt shop building evacuation system	0.0004	LB/T	OTHER CASE-BY-CASE
CO-0054	CF & I STEEL L.P. DBA ROCKY MOUNTAIN STEEL MILLS	CF & I STEEL L.P. DBA ROCKY MOUNTAIN STEEL MILLS	3312	331111	8/23/2006	ELECTRIC ARC FURNACE (EAF)	156	T/H	SELECT RAW MATERIAL TO MINIMIZE LEAD INPUT AND CONTROL OPERATING TEMPERATURE TO FIX VAPOR LEAD TO THE PM TO BE REMOVED WITH HIGH-EFFICIENCY FF.	5.70E-04	LB/T	Other Case-by-Case
CO-0061	CF&I STEEL L.P. DBA ROCKY MOUNTAIN STEEL MILLS	CF&I STEEL L.P. DBA ROCKY MOUNTAIN STEEL MILLS	3312	332111	3/31/2009	EAF #5	154	T/YR	SELECT RAW MATERIAL TO MINIMIZE LEAD INPUT AND CONTROL OPERATING TEMPERATURE TO FIX VAPOR LEAD TO THE PM WHICH WILL BE REMOVED WITH FABRIC FILTERS.	0.0006	LB/T STEEL	Other Case-by-Case
*CO-0066	ERMS PUEBLO	CF & I STEEL L.P. DBA EVRAZ ROCKY MOUNTAIN STEEL	3312		2/25/2016	Electric Arc Furnace (EAF 5)	185	ton/hour	BACT for Pb has been determined to be the use of process controls, and the application of high efficiency baghouses (SRC 1 and SRC 3) equipped with membrane bags.	0.0006	LB PER TON STEEL	BACT-PSD
OH-0342	FAIRCREST STEEL	THE TIMKEN COMPANY	3312	331111	10/13/2011	Electric Arc Furnace	1300000	T/YR	Roof canopy hood fume collecion system with Direct Evacuation Control to baghouse	0.001	LB/T	OTHER CASE-BY-CASE
NC-0112	NUCOR STEEL	NUCOR STEEL	3312	331511	8/14/2007	MELT SHOP				0.0016	LB/T	BACT-PSD

TABLE B-2: RBLC TABLE - MELT SHOP

RBLC ID	FACILITY_NAME	CORPORATE_OR_COMPANY_NAME	SIC_CODE	NAICS	DATE_DETERMINATION_LAST_UPDATED	FACILITY_DESCRIPTION	PROCESS_NAME	PROCESS_NOTES	POLLUTANT	CONTROL_METHOD_DESCRIPTION	EMISSION_LIMIT_1	EMISSION_LIMIT_1_UNIT	CASE-BY-CASE_BASIS
AL-0087	TRICO STEEL CO., LLC	TRICO STEEL CO., LLC	3312	331111	9/10/2002		METALLURGICAL FURNACES, LADLE		Carbon Monoxide		115	LB/H	BACT-PSD
AL-0202	CORUS TUSCALOOSA	CORUS TUSCALOOSA	3312	331111	1/24/2005	STEEL MILL	LADLE METALLURGY STATION	Station as part of the electric arc ladle furnace	Carbon Monoxide		32	LB/H	BACT-PSD
MI-0404	GERDAU MACSTEEL, INC.	GERDAU MACSTEEL, INC.	3312	331111	5/4/2016	Steel Mill	Melt Shop (FG-MELTSHOP)	This process is a ææflexible groupææ which includes an electric arc furnace (EUEAF), a ladle metallurgy station (EULMF), and two vacuum degassers (twin tank) (EUVTD). The limits apply to the whole flexible group, not individual emission units of the group. Also, the primary fuel is electric with Oxy-fuel booster burners. The RBLC process code is 81.210 AND 81.220. The steel is melted in an electric arc furnace using an electric arc along with natural gas fired oxy- fueled burners, which increase the steel melting rate. The molten steel is tapped from the vessel and is covered and transferred to the ladle metallurgy station. After ladle metallurgy is complete, the ladle is covered and transferred to the vacuum degassing station.	Carbon Monoxide	Direct Evacuation Control (DEC) and Co Reaction Chamber	260	LB/H	BACT-PSD
NC-0112	NUCOR STEEL	NUCOR STEEL	3312	331511	8/14/2007	STEEL PLATE MILL	MELT SHOP ROOF MONITORS	FUGITIVE EMISSIONS FROM MELT SHOP, LADLE PREHEATERS, LADLE DRYER, TUNDISH PREHEATERS, TUNDISH DRYERS AND TUNDISH NOZZLE PREHEATER	Carbon Monoxide		25.7	LB/H	BACT-PSD
OH-0315	NEW STEEL INTERNATIONAL, INC., HAVERHILL	NEW STEEL INTERNATIONAL, INC.	3312	331513	5/18/2012	STEEL MINI MILL, WITH 2 ELECTRIC ARC FURNACES AND A PRODUCTION RATE OF 4,409,248 TONS/YEAR. THIS FACILITY WAS NOT INSTALLED AS OF 10/09.	CONTINUOUS CASTERS AND SLAG POT DUMPING (2)	EACH STATION INCLUDES TUNDISH TURRET, LADLE AND TUNDISH DUMP STATION.	Carbon Monoxide		18.56	LB/H	BACT-PSD
OH-0315	NEW STEEL INTERNATIONAL, INC., HAVERHILL	NEW STEEL INTERNATIONAL, INC.	3312	331513	5/18/2012	STEEL MINI MILL, WITH 2 ELECTRIC ARC FURNACES AND A PRODUCTION RATE OF 4,409,248 TONS/YEAR. THIS FACILITY WAS NOT INSTALLED AS OF 10/09.	TUNDISH PREHEATER (8)	AP-42 EMISSION FACTORS WERE USED TO DETERMINE THE EMISSION LIMITS	Carbon Monoxide		1.85	LB/H	BACT-PSD
OH-0342	FAIRCREST STEEL	THE TIMKEN COMPANY	3312	331111	10/13/2011	Steel Plant. See #OH-246 permit issued 2/20/03 under the Timken Co. Sharing a limit with Harrison Steel OH-0339.	Continuous Caster		Carbon Monoxide		2.5	LB/H	BACT-PSD
AL-0087	TRICO STEEL CO., LLC	TRICO STEEL CO., LLC	3312	331111	9/10/2002		METALLURGICAL FURNACES, LADLE		Nitrogen Oxides (NOx)		8.8	LB/H	BACT-PSD
MI-0404	GERDAU MACSTEEL, INC.	GERDAU MACSTEEL, INC.	3312	331111	5/4/2016	Steel Mill	Melt Shop (FG-MELTSHOP)	This process is a ææflexible groupææ which includes an electric arc furnace (EUEAF), a ladle metallurgy station (EULMF), and two vacuum degassers (twin tank) (EUVTD). The limits apply to the whole flexible group, not individual emission units of the group. Also, the primary fuel is electric with Oxy-fuel booster burners. The RBLC process code is 81.210 AND 81.220. The steel is melted in an electric arc furnace using an electric arc along with natural gas fired oxy- fueled burners, which increase the steel melting rate. The molten steel is tapped from the vessel and is covered and transferred to the ladle metallurgy station. After ladle metallurgy is complete, the ladle is covered and transferred to the vacuum degassing station.	Nitrogen Oxides (NOx)	Real time process optimization (combustion controls) and the use of oxy-fuel burners.	26	LB/H	BACT-PSD
NC-0112	NUCOR STEEL	NUCOR STEEL	3312	331511	8/14/2007	STEEL PLATE MILL	MELT SHOP ROOF MONITORS	FUGITIVE EMISSIONS FROM MELT SHOP, LADLE PREHEATERS, LADLE DRYER, TUNDISH PREHEATERS, TUNDISH	Nitrogen Oxides (NOx)		9.6	LB/H	BACT-PSD

							DRYERS AND TUNDISH NOZZLE PREHEATER						
OH-0315	NEW STEEL INTERNATIONAL, INC., HAVERHILL	NEW STEEL INTERNATIONAL, INC.	3312	331 513	5/18/2012	STEEL MINI MILL, WITH 2 ELECTRIC ARC FURNACES AND A PRODUCTION RATE OF 4,409,248 TONS/YEAR. THIS FACILITY WAS NOT INSTALLED AS OF 10/09.	CONTINUOUS CASTERS AND SLAG POT DUMPING (2)	EACH STATION INCLUDES TUNDISH TURRET, LADLE AND TUNDISH DUMP STATION.	Nitrogen Oxides (NOx)		11.05	LB/H	BACT-PSD
OH-0315	NEW STEEL INTERNATIONAL, INC., HAVERHILL	NEW STEEL INTERNATIONAL, INC.	3312	331 513	5/18/2012	STEEL MINI MILL, WITH 2 ELECTRIC ARC FURNACES AND A PRODUCTION RATE OF 4,409,248 TONS/YEAR. THIS FACILITY WAS NOT INSTALLED AS OF 10/09.	TUNDISH PREHEATER (8)	AP-42 EMISSION FACTORS WERE USED TO DETERMINE THE EMISSION LIMITS	Nitrogen Oxides (NOx)	LOW NOX BURNERS	1.1	LB/H	BACT-PSD
OH-0342	FAIRCREST STEEL	THE TIMKEN COMPANY	3312	331 111	10/13/2011	Steel Plant. See #OH-246 permit issued 2/20/03 under the Timken Co. Sharing a limit with Harrison Steel OH-0339.	Continuous Caster		Nitrogen Oxides (NOx)	Low NOx burners	1.9	LB/H	OTHER CASE-BY-CASE
AL-0087	TRICO STEEL CO., LLC	TRICO STEEL CO., LLC	3312	331 111	9/10/2002		METALLURGICAL FURNACES, LADLE		Particulate Matter (PM)	NEGATIVE PRESSURE BAGHOUSE WITH STACK	46.7	LB/H	BACT-PSD
NC-0112	NUCOR STEEL	NUCOR STEEL	3312	331 511	8/14/2007	STEEL PLATE MILL	MELT SHOP ROOF MONITORS	FUGITIVE EMISSIONS FROM MELT SHOP, LADLE PREHEATERS, LADLE DRYER, TUNDISH PREHEATERS, TUNDISH DRYERS AND TUNDISH NOZZLE PREHEATER	Particulate Matter (PM)		4.8	LB/H	BACT-PSD
OH-0315	NEW STEEL INTERNATIONAL, INC., HAVERHILL	NEW STEEL INTERNATIONAL, INC.	3312	331 513	5/18/2012	STEEL MINI MILL, WITH 2 ELECTRIC ARC FURNACES AND A PRODUCTION RATE OF 4,409,248 TONS/YEAR. THIS FACILITY WAS NOT INSTALLED AS OF 10/09.	CONTINUOUS CASTERS AND SLAG POT DUMPING (2)	EACH STATION INCLUDES TUNDISH TURRET, LADLE AND TUNDISH DUMP STATION.	Particulate Matter (PM)	BAGHOUSE	1.4	LB/H	BACT-PSD
TX-0398	NUCOR JEWETT PLANT	NUCOR CORPORATION	3316	331 221	8/30/2004		CONTINUOUS CASTER		Particulate matter, filterable < 10 ¬ (FPM10)		0.29	LB/H	BACT-PSD
OH-0315	NEW STEEL INTERNATIONAL, INC., HAVERHILL	NEW STEEL INTERNATIONAL, INC.	3312	331 513	5/18/2012	STEEL MINI MILL, WITH 2 ELECTRIC ARC FURNACES AND A PRODUCTION RATE OF 4,409,248 TONS/YEAR. THIS FACILITY WAS NOT INSTALLED AS OF 10/09.	CONTINUOUS CASTERS AND SLAG POT DUMPING (2)	EACH STATION INCLUDES TUNDISH TURRET, LADLE AND TUNDISH DUMP STATION.	Particulate matter, filterable < 2.5 ¬ (FPM2.5)	BAGHOUSE	1.4	LB/H	LAER
MI-0404	GERDAU MACSTEEL, INC.	GERDAU MACSTEEL, INC.	3312	331 111	5/4/2016	Steel Mill	Melt Shop (FG-MELTSHOP)	This process is a ææflexible groupææ which includes an electric arc furnace (EUEAF), a ladle metallurgy station (EULMF), and two vacuum degassers (twin tank) (EUVTD). The limits apply to the whole flexible group, not individual emission units of the group. Also, the primary fuel is electric with Oxy-fuel booster burners. The RBLC process code is 81.210 AND 81.220. The steel is melted in an electric arc furnace using an electric arc along with natural gas fired oxy- fueled burners, which increase the steel melting rate. The molten steel is tapped from the vessel and is covered and transferred to the ladle metallurgy station. After ladle metallurgy is complete, the ladle is covered and transferred to the vacuum degassing station.	Particulate matter, total < 10 ¬ (TPM10)	Direct Evacuation Control (DEC), hood, and baghouse	13	LB/H	BACT-PSD
								This process is a ææflexible groupææ which includes an electric arc furnace (EUEAF), a ladle metallurgy station (EULMF), and two vacuum degassers (twin tank) (EUVTD). The limits apply to the whole flexible group, not individual emission units of the group. Also, the primary fuel is electric with Oxy-fuel booster burners. The RBLC process code is 81.210 AND 81.220. The steel is melted in an electric arc furnace using an electric arc along with natural gas fired oxy- fueled burners, which increase the steel melting rate. The molten steel is tapped from the vessel and is covered and transferred to the ladle metallurgy station. After					

MI-0404	GERDAU MACSTEEL, INC.	GERDAU MACSTEEL, INC.	3312	331 111	5/4/2016	Steel Mill	Melt Shop (FG-MELTSHOP)	ladle metallurgy is complete, the ladle is covered and transferred to the vacuum degassing station.	Sulfur Dioxide (SO2)		26	LB/H	BACT-PSD
NC-0112	NUCOR STEEL	NUCOR STEEL	3312	331 511	8/14/2007	STEEL PLATE MILL	MELT SHOP ROOF MONITORS	FUGITIVE EMISSIONS FROM MELT SHOP, LADLE PREHEATERS, LADLE DRYER, TUNDISH PREHEATERS, TUNDISH DRYERS AND TUNDISH NOZZLE PREHEATER	Sulfur Dioxide (SO2)		1.5	LB/H	BACT-PSD
OH-0315	NEW STEEL INTERNATIONAL, INC., HAVERHILL	NEW STEEL INTERNATIONAL, INC.	3312	331 513	5/18/2012	STEEL MINI MILL, WITH 2 ELECTRIC ARC FURNACES AND A PRODUCTION RATE OF 4,409,248 TONS/YEAR. THIS FACILITY WAS NOT INSTALLED AS OF 10/09.	CONTINUOUS CASTERS AND SLAG POT DUMPING (2)	EACH STATION INCLUDES TUNDISH TURRET, LADLE AND TUNDISH DUMP STATION.	Sulfur Dioxide (SO2)		0.13	LB/H	BACT-PSD
OH-0315	NEW STEEL INTERNATIONAL, INC., HAVERHILL	NEW STEEL INTERNATIONAL, INC.	3312	331 513	5/18/2012	STEEL MINI MILL, WITH 2 ELECTRIC ARC FURNACES AND A PRODUCTION RATE OF 4,409,248 TONS/YEAR. THIS FACILITY WAS NOT INSTALLED AS OF 10/09.	TUNDISH PREHEATER (8)	AP-42 EMISSION FACTORS WERE USED TO DETERMINE THE EMISSION LIMITS	Sulfur Dioxide (SO2)		0.013	LB/H	BACT-PSD
MI-0404	GERDAU MACSTEEL, INC.	GERDAU MACSTEEL, INC.	3312	331 111	5/4/2016	Steel Mill	Melt Shop (FG-MELTSHOP)	This process is a ææflexible groupææ which includes an electric arc furnace (EUEAF), a ladle metallurgy station (EULMF), and two vacuum degassers (twin tank) (EUVTD). The limits apply to the whole flexible group, not individual emission units of the group. Also, the primary fuel is electric with Oxy-fuel booster burners. The RBLC process code is 81.210 AND 81.220. The steel is melted in an electric arc furnace using an electric arc along with natural gas fired oxy- fueled burners, which increase the steel melting rate. The molten steel is tapped from the vessel and is covered and transferred to the ladle metallurgy station. After ladle metallurgy is complete, the ladle is covered and transferred to the vacuum degassing station.	Volatile Organic Compounds (VOC)	Direct Evacuation Control (DEC) and VOC Reaction Chamber.	16.9	LB/H	BACT-PSD
NC-0112	NUCOR STEEL	NUCOR STEEL	3312	331 511	8/14/2007	STEEL PLATE MILL	MELT SHOP ROOF MONITORS	FUGITIVE EMISSIONS FROM MELT SHOP, LADLE PREHEATERS, LADLE DRYER, TUNDISH PREHEATERS, TUNDISH DRYERS AND TUNDISH NOZZLE PREHEATER	Volatile Organic Compounds (VOC)		1.7	LB/H	BACT-PSD
OH-0315	NEW STEEL INTERNATIONAL, INC., HAVERHILL	NEW STEEL INTERNATIONAL, INC.	3312	331 513	5/18/2012	STEEL MINI MILL, WITH 2 ELECTRIC ARC FURNACES AND A PRODUCTION RATE OF 4,409,248 TONS/YEAR. THIS FACILITY WAS NOT INSTALLED AS OF 10/09.	CONTINUOUS CASTERS AND SLAG POT DUMPING (2)	EACH STATION INCLUDES TUNDISH TURRET, LADLE AND TUNDISH DUMP STATION.	Volatile Organic Compounds (VOC)		1.22	LB/H	BACT-PSD
OH-0315	NEW STEEL INTERNATIONAL, INC., HAVERHILL	NEW STEEL INTERNATIONAL, INC.	3312	331 513	5/18/2012	STEEL MINI MILL, WITH 2 ELECTRIC ARC FURNACES AND A PRODUCTION RATE OF 4,409,248 TONS/YEAR. THIS FACILITY WAS NOT INSTALLED AS OF 10/09.	TUNDISH PREHEATER (8)	AP-42 EMISSION FACTORS WERE USED TO DETERMINE THE EMISSION LIMITS	Volatile Organic Compounds (VOC)		0.12	LB/H	BACT-PSD

APPENDIX A

DRAFT PERMIT

APPENDIX B

PUBLIC NOTICE

APPENDIX C

LISTING OF ENTITIES AND ASSOCIATED MATERIALS

NEWSPAPER	Hertford County ???????	Public Notice
DAQ WEBSITE		Preliminary Determination, Draft Permit & Public Notice
OFFICIALS	Ms. Loria D. Williams Hertford County Manager 115 Justice Drive, Suite 1 Winton, NC 27986 (252) 358-7805	Public Notice
SOURCE	Mr. Robert McCracken VP - General Manager Nucor Steel – Hertford County Post Office Box 279 Winton, NC 27986 (252) 356-3707	Preliminary Determination, Draft Permit & Public Notice
EPA	Ms. Heather Ceron Air Permits Section U.S. EPA Region 4 Sam Nunn Atlanta Federal Building 61 Forsyth Street, S.W. Atlanta, Georgia 30303-3104 (404) 562-9185 Preliminary Determination, Draft Permit, and Public Notice, via electronic mail to: ceron.heather@epa.gov with cc to lorinda.sheppard@epa.gov	Preliminary Determination, Draft Permit & Public Notice
FLM	Ms. Jill Webster Branch of Air Quality 7333 W. Jefferson Avenue, Suite 375 Lakewood, CO 80235-2017 (303) 914-3804	None
WASHINGTON REGIONAL OFFICE	Mr. Robert Fisher NC DAQ Air Quality Regional Supervisor 943 Washington Square Mall Washington, NC 27889 (252) 946-6481	Preliminary Determination, Draft Permit & Public Notice